

In This Issue—*Lights That Are Too Dim*

MOTOR AGE

Vol. XLVII
Number 14

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Three Dollars a Year

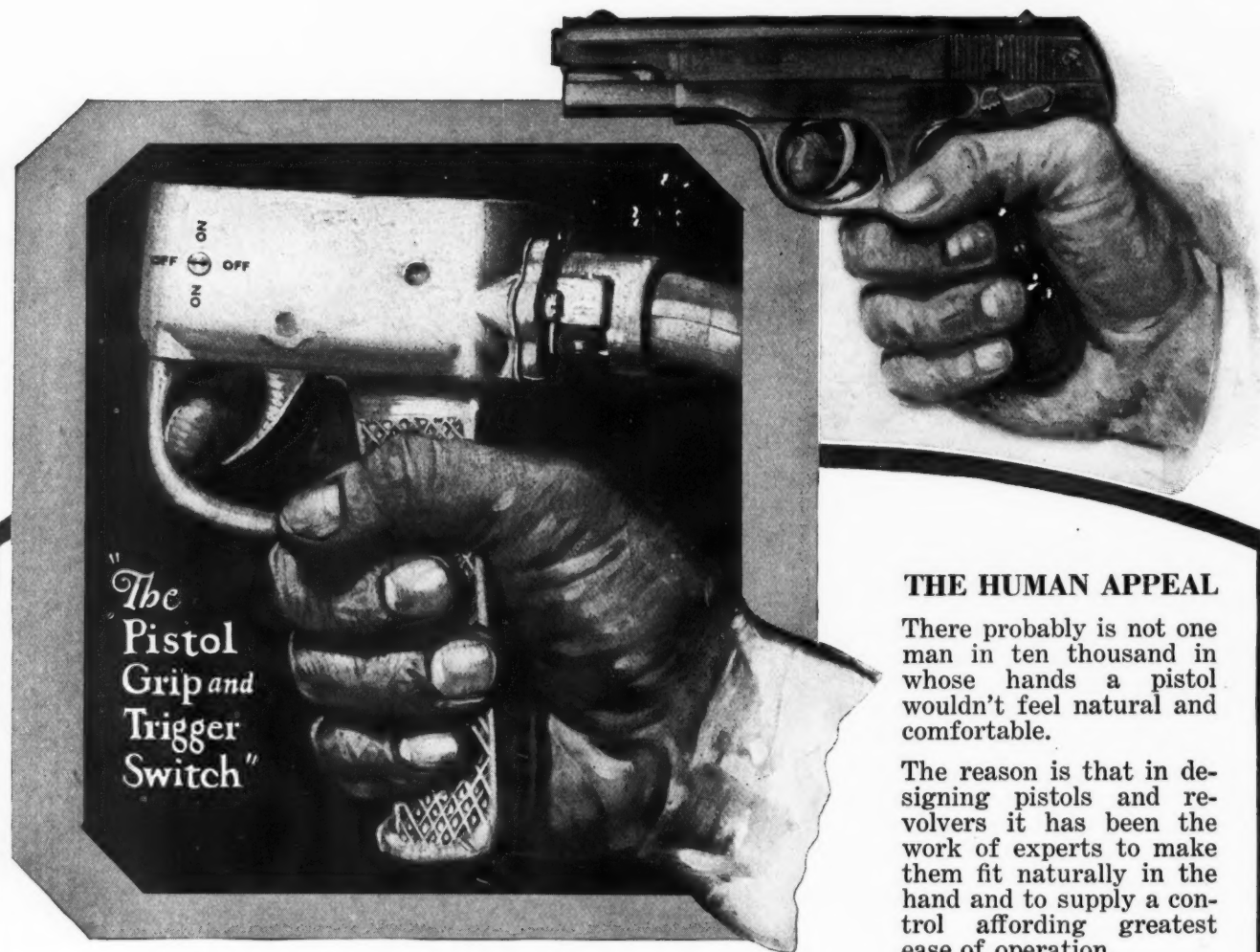
**Now you can order
automobiles.**

**No one was absent-
minded—no one over-
produced—someone
used brains—the sun
is coming over the
hill—there'll be a
shortage soon.**

Edward S Jordan

President
Jordan Motor Car Company
Cleveland, Ohio

Tech.



THE HUMAN APPEAL

There probably is not one man in ten thousand in whose hands a pistol wouldn't feel natural and comfortable.

The reason is that in designing pistols and revolvers it has been the work of experts to make them fit naturally in the hand and to supply a control affording greatest ease of operation.

The "Grip" and "Control" of the modern "automatic pistol" is said to be so natural as to make aiming and firing practically instinctive.

THE MECHANICAL APPEAL

THE best engineering gets the desired results in the simplest way. The ordinary switch is made up with small springs, tiny screws, and a multiplicity of small parts.

"The Pistol Grip and Trigger Switch," in addition to its ease of operation, is simplicity itself. It consists merely of a large contact block which is rotated between two large phosphor bronze contact blades. This contact block is given a one-eighth turn by means of a ratchet operated by the trigger, and the bronze contact blades are themselves the springs which snap the block over from "Off" to "On" and from "On" to "Off."

Large parts, utmost simplicity and the "snap action" are the mechanical fea-

tures which make the *"Pistol Grip and Trigger Switch"* superior and longer lived. Other advantages of the "Switch" are the Cable Clamp which holds the electric cable in a vise-like grip, relieving strain from the copper conductors; and the Screw Terminals making it possible to renew the electric cable, should it ever become necessary, without the necessity of soldering.

Most drill bit breakages occur when the bit breaks through the work. *"The Pistol Grip and Trigger Switch"* reduces drill bit breakage because when the operator feels the drill bit "go through" he instinctively tightens his grip, automatically pulling the trigger and stopping the drill.

You can secure BLACK & DECKER Portable Electric Drills, Electric Screw Drivers, Electric Socket Wrenches, Electric Tappers and Electric Grinders from the leading Automotive Jobbers

The GENUINE *"Pistol Grip and Trigger Switch"* is an exclusive patented feature of BLACK & DECKER PORTABLE ELECTRIC TOOLS.

The BLACK & DECKER MFG. CO.

TOWSON, MARYLAND, U. S. A.

Canadian Factory—Lyman Tube Bldg., Montreal, P. Q.

Branch Offices with Service Stations in

BOSTON
BUFFALO
DETROIT
CHICAGO

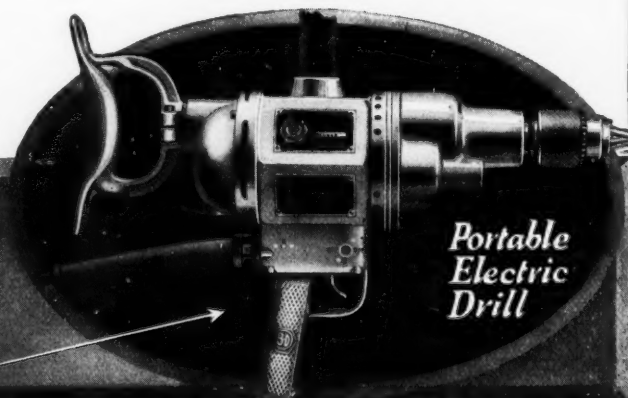
NEW YORK
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BALTIMORE
MINNEAPOLIS

SAN FRANCISCO
ST. LOUIS
KANSAS CITY
CLEVELAND

ATLANTA
DALLAS
MONTREAL
TORONTO

BLACK & DECKER

"With the Pistol Grip and Trigger Switch"



Portable
Electric
Drill

Lubrication Service IS a Profitable Business!

NO doubt about the profits from lubrication service. The first thing to think about after you're sure of your location is this: What kind of rack shall I buy?

You can build a rack out of wood. But nobody's *giving lumber away*. And wood doesn't *last*. Oil and grease, snow and wet and heat shorten its life.

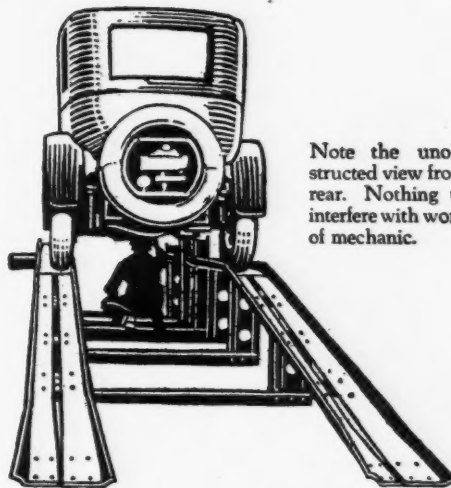
Steel costs only a little more, and it is worth *ten times* as much.

The new Weaver Pressed Steel Service Rack—made for years of use—is a splendid business investment. And its rugged, handsome appearance helps to attract business. It is the backbone of lubrication service.

WEAVER SERVICE RACK

WEAVER MANUFACTURING CO.
Springfield, Illinois, U. S. A.

WEAVER CANADIAN COMPANY, LTD.
Chatham, Ontario



Note the unobstructed view from rear. Nothing to interfere with work of mechanic.

Features:

Self-draining channels keep tread clear of mud, water and grease.

Locking gate at the side permits easy access under car, and acts as backstop to car when opened.

Unobstructed space between runways enables mechanic to get at any part of car.

Riveted cross-members make sure of permanent rigidity even after years of service.

Running board frames on both sides at front create platform for working on engine.

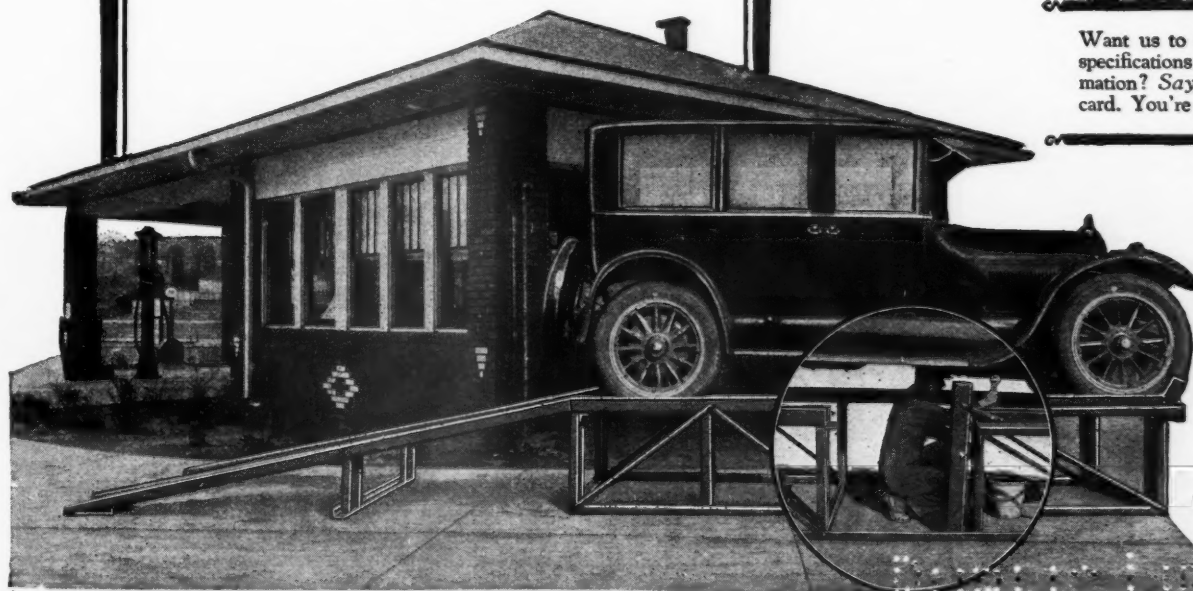
Curved front ends of channels are front-stop for car.

Husky enough for even the heaviest of passenger cars, long enough to take care of longest wheel-base.

Ask
Your
Jobber's
Salesman
He's a
Weaver
Salesman
Too!



Want us to send illustrated specifications and other information? *Say so!* On a Postcard. You're Welcome!



The gate permits quick easy access under the car and when locked open, forms a backstop that prevents the car from leaving the rack.



PRICE 60¢ EACH

(Up to and including 4 in. diameter)
(One to a Piston)

COMPRESSION TYPE 30c and up

INDIANA PISTON RING COMPANY, HAGERSTOWN, INDIANA, U. S. A.

J. H. TEETOR, President

C. N. TEETOR, Vice-President & General Manager

Export Sales Department, 549 W. Washington St. Chicago, Ill.

PERFECT CIRCLE Oil-Regulating Piston Rings

Fill in your name and address on margin. Indicate whether Repairman ☐ Car Dealer ☐ or Supply Store ☐ Mail today.

Supplying a National Demand

A nation-wide distribution system exists to supply the tremendous demand for PERFECT CIRCLE Oil-Regulating rings. These are the same rings used as standard equipment by more than 100 leading manufacturers. They stop oil-pumping, and give 1000 or more miles to the gallon of oil.

Complete stocks, containing all sizes and standard oversizes, for every motor, are maintained by the following jobbers. Order PERFECT CIRCLES—both Oil-Regulating and Compression rings—for your next job.

ALBANY, N. Y., Albany Hardware & Iron Co.
ATLANTIC CITY, N. J., Brighton Auto Supply Co.
BALTIMORE, MD., K & G Sales Company
BILLINGS, MONT., Northwestern Auto Supply
BOSTON, MASS., Linscott Supply Co.
BROOKLYN, N. Y., Farrell Auto Supply Co.
BUFFALO, N. Y., Great Lakes Motor Parts Co.
CASPER, WYO., Wyoming Automotive Co.
CHARLOTTE, N. C., Carolina's Auto Supply
CHICAGO, ILL., The Automobile Supply Co.
The Beckley-Ralston Co.
Chicago Auto Equipment Co.
Electric Appliance Co.
Ideal Auto Supply Co.
Sheridan Auto Supply Company
Universal Automotive Supply Co.
CINCINNATI, O., The Ohio Rubber & Textile Co.
Dorman Automotive Parts & Gear Co.
COLUMBIA, S. C., Gibbs Machinery Co.
COLUMBUS, O., J. H. and F. A. Sells Company
DALLAS, TEXAS, Electric Appliance Co.
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INDIANAPOLIS, Central Rubber & Supply Co.
W. J. Holliday & Co.
KANSAS CITY, MO., The Equipment Co.
Richards & Conover Hardware Co.
LINCOLN, NEBR., Nebraska Buick Auto Co.
LITTLE ROCK, ARK., O. D. Tucker IV & Co.
LOS ANGELES, CALIF., The Banta Company
Western Rubber & Supply Co.
MIAMI, FLA., Bunny Supply Co., Inc.
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MILWAUKEE, WIS., Julius Andrae & Sons Co.
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N. Y. & Brooklyn Auto Supply Co.
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OKLAHOMA CITY, Sharp Auto Supply Co.
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PEORIA, ILL., Clark-Smith Hardware Co.
PHILADELPHIA, PA., Casanave Supply Co.
P-D-O Company
Supplee-Biddle Hardware Co.
PITTSBURGH, PA., The Beckley-Ralston Co.
Jackson Motor Supply Co.
May Auto Parts Company
POCATELLO, IDAHO, Inter-Mountain Elec. Co.
PORTLAND, ORE., Marshall-Wells Company
PROVIDENCE, R. I., Franklin Auto Supply Co.
READING, PA., P-D-O Co.
RICHMOND, IND., John J. Harrington, Inc.
RICHMOND, VA., Payne-Anderson-Smith Co.
ST. LOUIS, MO., Auto Parts Company
Shapleigh Hardware Co.
ST. PETERSBURG, FLA., Ace Automobile Co.
SALINA, KANS., Lee Hardware Co.
SALT LAKE CITY, Inter-Mountain Elec. Co.
Motor Mercantile Company
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UTICA, N. Y., Perry & Sherman, Inc.
WACO, TEX., McLendon Hardware Co.
WASHINGTON, D. C., Southern Automobile Co.
WICHITA, Johnson Bros. Auto Supply Co.

MOTOR AGE

Reg. U. S. Pat. Office

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Entered as Second Class Matter Sept. 19, 1899, at the Post Office at Chicago, Ill., under Act of March 6, 1879.

A Reference Number

ON April 30th MOTOR AGE will publish a feature number of a new sort—our first Sales and Service Reference Number.

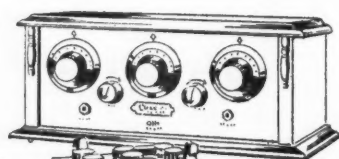
When hundreds of people tell you about their needs and thousands of them write you asking questions about their sales and service problems, you get a pretty good idea of what they want. That in a nutshell is one of the reasons for devoting this particular issue to sales and service reference data.

MOTOR AGE editors know that right at the opening of the Spring selling season is the time when dealers need selling ammunition. Therefore, we plan to present to the trade a compact body of reference data of the most practical kind. The very things that you need to know all the year around in order to sell and service efficiently will be put into this number in easily accessible form. It will be the kind of a general automotive reference book that you have always wished you had at your finger tips.

Just at the present moment we cannot give you a full list of the data this number will contain. You will be interested in knowing, however, that one of the things will be an entirely new and more comprehensive series of Flat Rate operations. This will be the most complete Flat Rate information ever made available to the trade, and we know it will be appreciated by all of our readers.

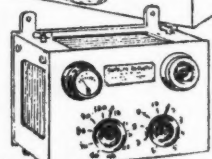
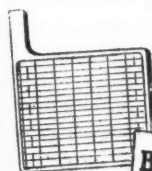
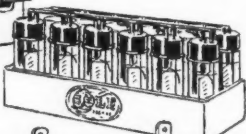
This important number is going to be one of the most permanently valuable ones that we have ever published. Coming at the opening of the Spring selling season, it will reach you just when you need it the most.

Growth



RADIO SETS: A reliable guaranteed line that you can sell with safety and profit. Send for descriptive matter and prices.

RADIO BATTERIES: Complete line to meet every radio requirement. A money-maker for you.

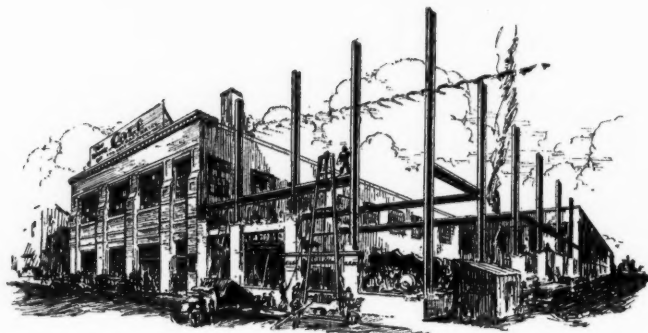


BATTERY PARTS: Special service to battery stations and assemblers. Send for catalog and quotations.

BATTERY PARTS and SHOP EQUIPMENT

SHOP EQUIPMENT: Everything needed by the battery man at money-saving prices.

COLE BATTERY SALES CORP.
Chicago-Pittsburgh



THE history of this company has been a record of growth—a record of healthy and unbroken expansion, punctuated at regular intervals by a series of additions to our buildings and manufacturing facilities to meet the ever increasing demand for COLE products.

Now another big addition to the COLE factory is under construction. Again the COLE output capacity will be almost doubled in order to serve the steadily growing market for COLE products.

This forward march of progress can be directly traced to three outstanding features of the COLE manufacturing and merchandising policy:

First, rigid adherence to highly exacting quality standards, regardless of cost or competitive conditions; second, the maintenance of a reasonable schedule of prices based on actual merchandise value; and, third, a liberal dealer policy which permits the merchant to sell COLE products profitably.

Cole Battery Sales Corp.

Factory and General Offices

2435-37-39 Indiana Ave., Chicago, Ill.

Eastern Branch: 6428 Hamilton Ave., Pittsburgh, Pa.

COLE BATTERIES

"THE BEST BY EVERY TEST"

STUDEBAKER

The Studebaker dealer has the newest complete line of cars on the market—a car with which to satisfy *every buyer*—except the very lowest-priced field. ~

STANDARD SIX		SPECIAL SIX		BIG SIX	
3-Pass. Duplex-Roadster	\$1125	4-Pass. Duplex-Roadster	\$1495	7-Pass. Duplex-Phaeton	\$1875
5-Pass. Duplex-Phaeton	1145	5-Pass. Duplex-Phaeton	1495	5-Pass. Coupe	2450
5-Pass. Coach	1295	4-Pass. Sport Roadster	1645	5-Pass. Brougham	2575
3-Pass. Country Club Coupe	1345	5-Pass. Coach	1695	7-Pass. Sedan	2575
5-Pass. Coupe	1445	4-Pass. Country Club Coupe	1695	7-Pass. Berline	2650
5-Pass. Brougham	1465	5-Pass. Brougham	1795	Note: Standard Six—4-wheel brakes, 4 disc wheels . . \$60 extra Special Six—4-wheel brakes, 5 disc wheels . . \$75 extra Big Six—4-wheel brakes, 5 disc wheels . . \$75 extra	
5-Pass. Sedan	1545	4-Pass. Victoria	1895		
5-Pass. Berline	1600	5-Pass. Sedan	1985		
		5-Pass. Berline	2060		

Prices f. o. b. factories

THE STUDEBAKER CORPORATION OF AMERICA, SOUTH BEND, INDIANA



THIS IS A STUDEBAKER YEAR

STUTZ MOTOR CAR COMPANY

OF AMERICA, INC.

INDIANAPOLIS, IND., U.S.A.

Cable Address "STUTZ"

April 2, 1925.

Mr. Gordon Welburn,
The Acme Repair Shop,
Toledo, Ohio.

My dear Mr. Welburn:

You ask me how much money it takes to get into the automobile business. That bears to a great extent as to where you are going to start and the necessary magnitude of your operations.

Let me tell you a little story: Some years ago in a city of 200,000 people, I obtained a dealer who was then a foreman in a repair shop. He had \$5,000 saved up, he borrowed \$5,000 more and I endorsed his notes personally for a third \$5,000. This man has made a splendid living in the years since and is today worth a little over \$200,000.

Of course, he did not waste his money. He had courage, vision, character, the ability to inspire and hold confidence and reasonably sound business judgement.

I believe this a greater business today than it ever was. I believe the opportunities are greater, and I believe the qualifications for success are unchanged.

Let's get the other essentials of success first in this business and add the question of finance second. No man who ever possessed and used the other qualifications had to worry about the money to back him up. Won't you write me fully and frankly, giving me as nearly as possible a word picture of yourself and what you want to do in this automobile business to make a success, and I'll do all I can to help you - at least, I can give you the concentrated result of 25 years experience in the automobile business.

Yours very truly,

STUTZ MOTOR CAR COMPANY OF AMERICA, INC.

F. E. Moskovich
President.



DIRECTORS
EUGENE V. R. THAYER
CHAS. H. SCHWAB
HICKS A. WEATHERBEE
WILLARD A. MITCHELL
WALTER C. JANNEY
ANTHONY CASSIDY
FREDRICK E. MOSKOVICS.

I'll do all I can to help YOU! The name and address have been changed on the above letter but consider them as YOUR OWN. Write me fully and frankly.—FREDRICK E. MOSKOVICS, President, STUTZ MOTOR CAR COMPANY of America, Inc., Indianapolis, Ind.

Car Dealer, instructing his
salesmen:



“And, certainly, tell them
about Timken Bearings.



In the first place, Timken
Bearings are good bearings.



And secondly, they have a
real job to do.



And lastly, every prospect
knows them by name.”

Were the Reo Franchise to Comprise the Selling Privilege Only on the Mighty Speed Wagon~

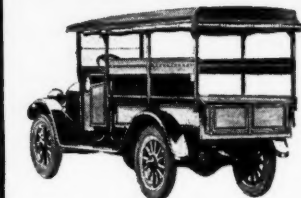
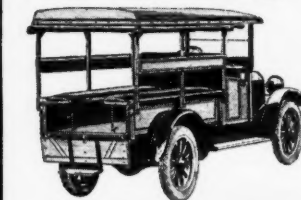
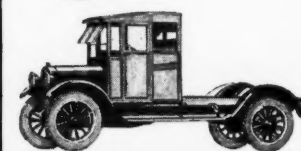
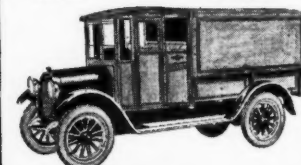
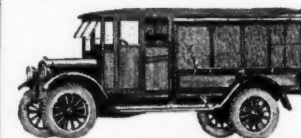
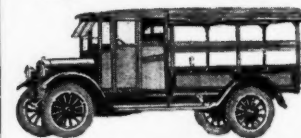
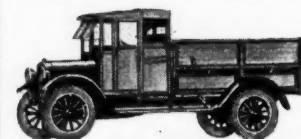
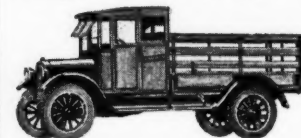
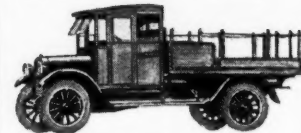
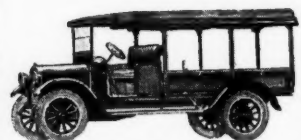
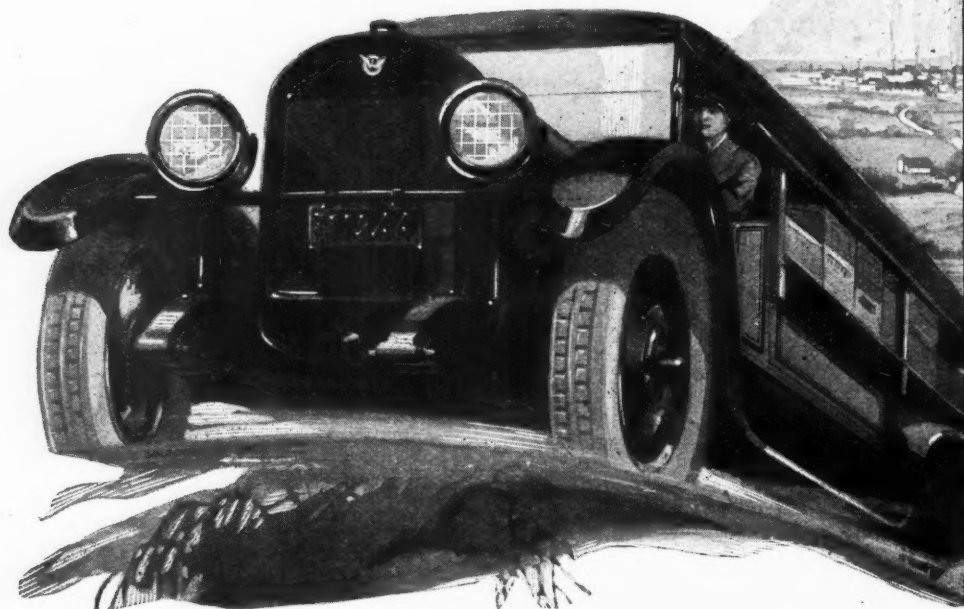
Reo dealers would still be assured of profitable business in generous volume, because the Speed Wagon dominates in sales value as in performance ability. But—

Year 'round sales opportunity is further insured by other Reo products: seven easy-selling Passenger Cars, three average-load Busses and a 6-cylinder Taxicab.

Such a line, backed by the prestige of one of the very few 20-year-old manufacturers, represents the foundation upon which the unusual value of the Reo franchise is based.

Territory is open, but application must be made immediately.

REO MOTOR CAR COMPANY, Lansing, Michigan



MOTOR AGE

Vol. XLVII

Chicago, April 2, 1925

No. 14

Service at a Profit Is Theme of

Detroit Convention and Equipment Show

Second Event at Detroit May 20 to 23 Will Be Open Free to All Connected With the Industry—Seven Associations Co-operate

New York, March 30.
THE management of the Second National Automotive Service Convention and Automotive Maintenance Equipment Show, which will be held in the General Motors building, Detroit, May 20 to 23, is especially desirous of having the automotive trade know that both events will be open free to all dealers, service managers, shop proprietors, distributors, factory representatives, engineers, trade association representatives, mechanics, fleet owners and all others in the trade who are interested.

To Demonstrate Service Tools

As previously announced the theme of the convention is to be "Service at a Profit."

The convention sessions will be held from 2 to 5 o'clock p. m. on each of the first three days, and the equipment show will be open from 10 o'clock a. m. to 10 o'clock p. m. the first three days, except during the convention sessions, and on the closing Saturday from 10 o'clock a. m. to 6 o'clock p. m.

The equipment show, which was highly appreciated last year, is expected to attract still greater attention this year. This show appeals particularly to practical service men because all tools and machines are demonstrated in action.

Although the trade will be freely admitted to both show and convention, tickets will be necessary in order to prevent the crowding of the affairs by persons not connected with the trade. Invitations and tickets are being sent to a large list of known automotive trade estab-

lishments, but any such who fail to receive tickets may obtain them from any one of the trade associations co-operating in the show and



Alvan Macauley, chairman of Service Committee, National Automobile Chamber of Commerce

convention. These associations are National Automobile Chamber of Commerce, New York; Society of Automotive Engineers, New York; Motor and Accessory Manufacturers' Association, New York; National Automotive Dealers' Association, St. Louis; Automotive Equipment Association, Chicago;

Automotive Electric Association, Cleveland, and Automotive Manufacturers' Association, Chicago.

The Service Committee of the National Automobile Chamber of Commerce, headed by Alvan Macauley, president of the Packard Motor Car Co., will be directly responsible for the convention, assisted by Coker F. Clarkson, general manager of the Society of Automotive Engineers; C. A. Vane, general manager of the National Automobile Dealers' Association, and Neal Adair of Motor and Accessory Manufacturers' Association.

S. A. Miles to Manage

The Show will be managed by S. A. Miles, who is the veteran manager of the National automobile shows, having on his advisory committee M. L. Heminway, general manager of Motor and Accessory Manufacturers' Association, and W. M. Webster, commissioner of the Automotive Equipment Association.

The invitations to exhibit, accompanied by space diagrams and application blanks, are now being mailed to prospective exhibitors. Applications to be considered in the first allotment must be received not later than April 3.

The last feature on the last day of the meeting will be somewhat spectacular and most interesting, particularly to dealers. It will be the painting of an automobile ready for the road in one hour to show the possibilities of the new nitrocellulose finishes in helping to move used cars.

Dim Lights—Wrong Wire Size Often Chokes Current

Red Head and Valvy, from Experience in Bill Fixit's Shop, Expound Principles of Automotive Electrical Wiring

By A. H. PACKER

ALL night the thunder had rumbled and sundry flashes of lightning had made the room where Bill Fixit's men were sleeping as light as day, but nothing bothered the Red Head and his friend. Nine hours a day they could hit it up in the shop, but driving along the open road was different, and after doing justice to a good supper, which Joe's mother had provided, they hit the hay without much concern for a little thing like a spring thunder storm.

Valvy was first to raise his head from the pillow and look out the window. The sun was shining and across the sky little wisps of cloud were chasing each other, as though seeking an appetite for breakfast. From the kitchen below floated voices and the enticing odor of frying bacon. It was too much for Red. He could stand any sort of noise, sleep through it with seeming pleasure, but an invitation to eat was more than he could stand.

Bulb Is Dim

After breakfast Joe said, "You know since you fellows called my attention to the question of wire size and its effect on the voltage at the far end of the circuit I have been thinkin' about the light I have out in the shed. It gets current from a battery I keep here at the house, but the bulb is so dim you nearly need to strike a match to see whether it is lighted or not. I tried other bulbs, but it didn't seem to make any difference."

"It's the same thing exactly," said Red. "It's voltage loss in the wire that robs your grinding motor of power and makes the lamp dim out in your shed. The lamp problem is a little easier to figure out, so if it's all right with you we can go over to your desk and study things over while the roads are still too wet to make it likely that you will get a rush of work."

"How far is it from the house to the shed?" asked Red, when they were seated at Joe's desk.

"About four hundred feet. Perhaps not quite that far."

"We'll call it 375 feet," said Red. "That will make it 750 feet of wire, for the current has to go there and back again. If you have used No. 10 wire, which has a resistance of about 1 ohm in each 1,000 feet, you will have a resistance of about $\frac{3}{4}$ ohm. One 21 C. P. bulb, such as is



Valvy obeyed an irresistible impulse and the car slid to a stop

ordinarily used in a head lamp, will draw about 2.6 amperes at 6.5 volts. To find its normal resistance, we divide 6.5 representing volts by 2.6 representing amperes and get 2.5, which is its resistance in ohms.

"Now the current going out from one battery terminal and back to the other has to go through all the wire as well as through the lamp filament, so it must overcome the resistance of both wire and lamp. For that reason we add the lamp resistance to the wire resistance, or adding 2.5 to .75 we get 3.25 as the total resistance. Now to figure out the current that really flows we divide the voltage, which we will say is 6.5, by the resistance of 3.25 ohms, and we get 2 amperes as the actual current.

"The actual voltage at the lamp is not, then, the battery voltage of 6.5, but it is

the lamp resistance times its current, or 2.5 ohms times 2 amperes or 5 volts. Perhaps it will be more clear if you look at this sketch I have made (Fig. 1), which shows how the voltage divides up in the circuit.

"Starting with 6.5 volts we end up with only 5 at the lamp, and if you doubt this you can prove it with a voltmeter. The question then comes up as to where we have lost the other volt and a half."

"Used up in the wires," said Joe, as he studied the sketch.

A Close Call

"Right," said Red. "Just thrown away. It makes a little heat, but not enough to do any harm and not enough to be useful. In fact we can figure the same current of 2 amperes times our .75 ohm wire resistance and we will get 1.5 volts as the electrical pressure wasted. About what size wire is it, that runs out to the shed?"

"Some of this," said Joe, as he handed Red an ordinary piece of lamp cord.

"About No. 16 or No. 18. No wonder you get next to no light out there. Even a 21-candle power lamp at 6.5 volts will drop down to 7.8 candle power when the voltage is 5, so what can you expect. We figured on No. 10 wire. The wire reduces one-half in size for every three sizes. That means that No. 13 would have twice the resistance and therefore No. 16 would have four times the resistance we figured on. Not much chance to have any light under those circumstances. You would have a light nearly as bright by using a smaller bulb, which doesn't try to get so much current through the wire."

"That's sure interesting," said Joe. "I am glad I learned something about wiring before I tried to wire up the jitney buses we are getting here in town. There is a local body company buying the chassis and doing the rest themselves, but they think I am right there when it comes to electrical stuff and they are going to have me do the electrical work."

BILL FIXIT STORIES

No. 2

Story No. 1 in this new series by A. H. Packer was published in the March 19 issue of MOTOR AGE.

Synopsis: The Red Head and Valvy, Bill Fixit's electrical trouble shooting men, started on a trip in a Speedway car that Bill had taken in trade on a new Comfy car. The Speedway car gave trouble after the first hundred miles and the two explorers examined the electrical system, overlooking possible carburetor trouble. At the Wobble Inn, run by a young man named Joe, they stopped for repairs and Joe located the cause of the missing in a bit of scale under the carburetor needle valve. Then Red and Valvy started to give Joe some electrical assistance in respect to a grinder he had made from an old starter, but they were interrupted in their work by a storm coming up. Joe asked them to stay all night on account of the storm, which they did, with the intention of taking up Joe's problem again in the morning.

You fellows just saved my neck on that job, and no mistake. Now let's see if I can tell what you do in multiplying and dividing to change the ohms to amperes, or whatever it is.

"You multiply volts by—"

"No, you're wrong already," said Red. "Better let me write it down for you, and then when we are gone you figure out a few lighting problems, so you do not get too rusty before those jobs come in."

"It's this way. When you want volts and know the amperes and ohms, you multiply. For example on your light in the shed we knew that 2 amperes would flow through it, and that its resistance was 2.5 ohms. Or 2 amps by 2.5 ohms equals 5 volts.

Multiplication vs. Division

"That's the only time you multiply, when you want to find out the volts, otherwise it's always a case of divide, with the volts on top of the fraction and either the amperes or the ohms divided into it.

"Taking our lamp problem the other way and assuming we knew we had 5 volts at the lamp we would say, amperes equal volts divided by ohms. Or amps equal 5 divided by 2.5, or 2 amps. Or if the amperes and volts are known, we have: ohms equal volts divided by amps. Or ohms equal 5 divided by 2, or 2.5 ohms.

Volts = Amperes TIMES ohms.
Amps. = Volts DIVIDED by ohms.
Ohms = Volts DIVIDED by amps.

"In the case of your starting motor which you tried to use as a grinding motor, you have about ten feet of No. 10 wire in the circuit, but in addition to the resistance of the wire itself you have some contact resistance due to the small size connections used. Wire of that size

is only supposed to carry from 24 to 32 amperes, depending on the kind of insulation it has, but your motor may need a current of 100 amperes or more when you are using a good deal of pressure in grinding some tool.

"The wire itself, from wiring tables, would have a resistance of .0099 ohms which with 100 amperes flowing would give us a voltage loss of .99 volts. Actually this wire would get very hot with this much current flowing and when wire gets hot its resistance gets still higher. Wiring tables tell us that at the temperature of boiling water this resistance would come up to .0131 ohms, which with 100 amperes flowing would cut our available voltage by 1.31 volts."

"I get the idea," said Joe. "Big cables would probably make that rig all right, but I am getting tired of home-made tools. Even when you get them working right, a fellow's customers take one look, know your stuff is home made, and then you have a sweet time justifying a reasonable flat-rate charge for the work done. I think from now on I will get one piece of equipment at a time, charge enough for work done with it to make it pay, and then get another item as soon as I can. Right now, however, I want you to tell me how I am going to wire up these jitney buses so the bulbs will be bright."

"What voltage batteries will they have?" said Red.

"Twelve volt."

"That's good, you can save some on wire, for when the voltage goes up, the current goes down, to get the same power and the same light. Then with half the current you can use wire one-fourth as large for the same loss of electrical energy.

How Average Jitney Is Wired

"Recent investigations show that the average jitney bus is wired up like this (Fig. 2). Here the lamps near the battery are fairly bright, while the ones far away are dim. In most cases No. 16

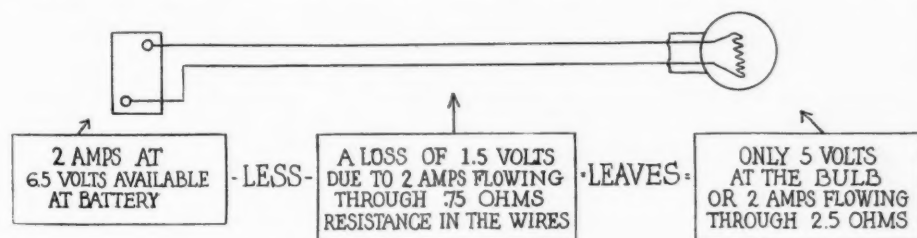


Fig. 1.—The voltage you have left at the lamp is the voltage you start with, minus the loss in the wiring

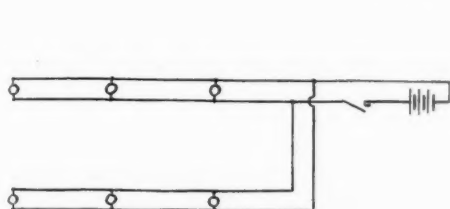


Fig. 2.—Typical way of wiring a bus by the fellow who does not know. It makes some of the lamps dimmer than others

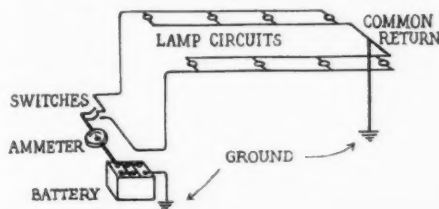


Fig. 3.—This method of wiring a bus will make the loss of voltage due to resistance of wiring about the same for all lamps.

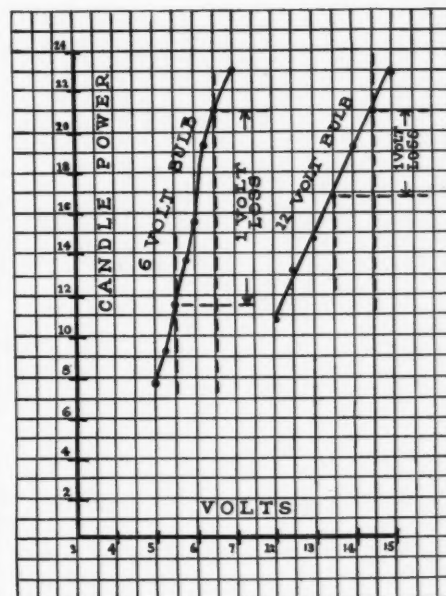


Fig. 4.—It's surprising how fast the lamps get dim with reduction in voltage. These curves tell the story

stranded wire was used, which with a six-volt system produced so much loss in the wires that 4-candlepower lamps gave only 2.6 actual candlepower, the average lamp voltage being down to 5.6 volts.

"This (Fig. 3) shows a much better method of wiring, for it gives a separate circuit for the lamps on the two sides of the bus and puts about the same amount of wire resistance in the circuit of each bulb.

"Take a look at this," said Red, as he fished a slip of paper out of his pocket. "These curves (Fig. 4) show what happens to the light you get when the voltage at the lamp is reduced. One of the curves is for 6-volt and the other for 12-volt bulbs. One volt loss for the 6-volt bulb takes away about 45 per cent of the light, while the same amount of loss in the 12-volt wiring takes away but 20 per cent of the light."

Just then a customer drove in and wanted a tire changed in a hurry.

"Have to get busy now," said Joe.

"Well, it's time we were moving along," said Valvy. "Hope you make a hit with those jobs of bus wiring."

And soon the Speedway car, with Bill Fixit's two adventurous electricians, was speeding west through the coal-field region.

A Call From the Inner Man

Twenty miles from the Wobble Inn something told Red and Valvy that it was nearly dinner time, and they scanned the road ahead for signs of the next town or a farm house at which a handout might be purchased. As the car approached a bridge over a small stream, a man stepped into the road and held up one hand as a sign to stop. Held easily in the other hand was a sawed-off shotgun. His attitude was not threatening, but Valvy, who was driving, obeyed a sudden impulse. Both feet went down to the floor, the rear wheels locked, and the car slid to a sudden stop.

A Price Tag on Every Article

Window Display That Tells the Public What It Will Have to Pay Is Important Factor in Building Big Accessory Business

THE Cliffords organized an accessory business at 426 Fulton Street, in Peoria, Illinois, about a year ago.

They already have more than quadrupled their business. The Clifford Shop has got people coming in and they have established such a following of buyers and thousands of people wend their way toward their place each day.

The secret of all their success? These two brothers name several things as being their secret. One is their window work. From previous affiliations with other accessory shops, they learned that few of these dealers changed their window displays more than every week or two. When they went into business for themselves, this was their chief aim—change window displays twice a week.

Another thing in regard to their windows—every article displayed bears a price tag.

Natural to Compare Prices

It is natural for the general public to compare prices and so it is that prospective buyers realize that the Cliffords have priced these items fairly. The enterprising brothers note with great pleasure that a crowd is before that window from morning until late at night and 50 per cent of the lookers come inside to buy. They attribute, then, a great deal of their steadily growing patronage to these plain, neat price tags.

Once inside the store the customer is received with courteous attention. His wants are attended to promptly and he is made to feel that the proprietors and their employes are anxious and willing to serve him.

Of course, the Cliffords had the good fortune to enjoy a vast acquaintance, both in a business and social way. This was a substantial aid in getting started, but from their own personality, and treatment of their public, they can point out hundreds of customers that when entering the store, say that such and such a person sent them there. They do



A small store but one where big profits come from quick turnover. The Cliffords have built a large accessory business by clever advertising, window displays and with the price of every article plainly marked, and fair treatment of customers.

PHONE 3-2655



CLIFFORD'S LABOR DAY BARGAINS

Some dry man wrote "It Ain't Gonna Rain No More." But tomorrow it's going to rain bargains here. Join the crowds. "GET IT AT CLIFFORD'S!"



Star Storage BATTERIES
Case type, guaranteed 11-plate; will last 10 years.
DASH LAMPS..... 39c
TROUBLE LAMPS..... \$1.00

Luggage Carriers
Extend full length of run board..... 95c

Transmission Linings
Complete set of 3, with rivets for Fords..... 39c

GOOD MIRRORS
For open or closed cars, bevel edged glass..... 59c

FORD DOOR POCKETS
..... 59c

Miller Cord Tires
ALL NEW AND GUARANTEED
Buy a known tire for less and have the satisfaction of knowing that your tire troubles are over.

30x3	\$ 6.95
30x3 1/2	7.95
32x3 1/2	13.50
34x4	14.50
	15.50
	16.00
	16.50

THIS IS THE PLACE

CLIFFORDS

426 FULTON Opposite City Hall

OPEN EVENINGS UNTIL NINE AND SUNDAY MORNINGS

Specimen catch lines used in Clifford's advertising, and the distinctive trade mark that helps keep the store before the public.

their very utmost to please every new customer entering the store and feel sure then that person, too, will send another friend to them. They are strong believers of word of mouth advertising.

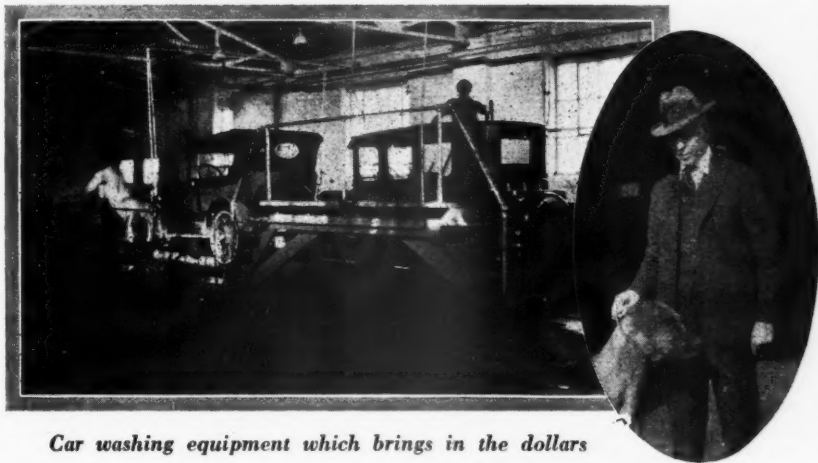
These two men have made a thorough study of motorists' wants and from this study and past experience they keep a stock on hand that meets all demands upon them. They handle nothing but standard merchandise.

Last but not least, they have plodded their way into the memory of every newspaper reader by their clever ad

writing. They make constant use of the newspaper columns and readers come to look for their ad, both to read the bargains offered therein and the witty sayings. Two brothers, Emmett and Jack, both express some opinion at the top of each ad, usually a mirth provoking line. These go far toward bringing them attention and business.

The arrow-tire sign which they adopted also has indelibly stamped itself upon their public. Children say, "Oh, there is the arrow-tire sign; it must be from Clifford's."

Good Wash Rack a Profitable Investment



Car washing equipment which brings in the dollars

Tom Jay of Kokomo, Ind., Built His from
MOTOR AGE Plans at Cost of About
\$1200, and Business Flowed in

IN a town where automobiles really get dirty and muddy wheels mean nothing else but muddy wheels, Tom Jay, proprietor of the Auto Inn, at Kokomo, Ind., decided early last spring that he needed a new wash rack for his fine garage.

Remembering that he had seen the plans for a model wash rack in MOTOR AGE some time before, he dug through his back copies and found what he wanted in the issue of October 11, 1923. The rack, as described, seemed to be one that would fit his needs exactly, so he sent for the blueprints, which were furnished him by MOTOR AGE.

"I couldn't do without it now," is what Tom says after using the washing plant, built according to MOTOR AGE plans, for nearly a year.

In order to introduce the new rack in Kokomo, Mr. Jay put on a merchandising campaign that brought him much more business the first day than could be cared for. More than 200 motorists brought their cars to the Auto Inn on that day and many of them had to be turned away. This is how he did it:

It was announced through newspaper advertisements and through circular letters to car owners that on the opening day any car, of any size, open or closed, would be washed for one dollar. Only trucks were barred from the bargain day price. The crowds started to come in the morning and the new wash rack was busy all day. Those who could not be accommodated were given orders and their cars washed later in the week.

His Customers Come Back

But the opening rush did not end Mr. Jay's car washing business, for a large number of those who took advantage of the dollar offer have continued to come back consistently and the Auto Inn is getting a large share of the business in Kokomo. Mr. Jay believes this is due to the high quality work that is made possible by the wash rack and the short time in which a car can be turned out. With four men at work cars are cleaned perfectly at the rate of one every 12 minutes. One man working alone is able to handle 16 cars a day.

The washing plant is built in exact compliance with the MOTOR AGE plans with the exception that concrete is used

At The AUTO INN Car Laundry DOLLAR DAY

Tuesday, March 4th

"CAR WASHING DAY"

WE WANT EVERY MOTORIST IN KOKOMO AND HOWARD COUNTY to know that in order to introduce to them the merits of our splendid new car-washing equipment, just installed, we will FOR ONE DAY ONLY wash any car, any size, closed or open model, for ONE DOLLAR.

WE BELIEVE our new Washing Equipment to be the most complete in the state of Indiana. It has been built by us after special plans furnished us by Motor Age, the motoring authority, and is regarded as the best that can be made.

UNDER OUR SPECIAL SYSTEM the car is washed thoroughly, made absolutely CLEAN, is dried and hand-polished in less than thirty minutes. This cleaning includes a special air cleaning of all cushions and upholstery.

WE GUARANTEE THE BEST OF WORK. Our regular prices, to obtain after March 4th, are very reasonable, but on our own DOLLAR DAY, March 4th, ONE DOLLAR will do the job.

Special Notice!

It is probable that we will have more business DOLLAR DAY than we can handle. In order to give all of our trade a chance at this special offer we will, if you will call at the AUTO INN at any time on March 4th and sign an order, wash your car at the price of ONE DOLLAR any time within the next three days.

No Trucks Washed Under the Dollar Day Plan.

Regular Prices

Car Washing
At the Auto Inn
(After March 4)
Any Ford \$1.50
Open or closed
Any Car \$2.
(Other than Fords)
Open or closed
Wire Wheels
Four..... 50c Extra
Six..... 75c Extra

Auto Inn Garage

Telephone 106

TOM JAY, Prop.

W. Jackson St.

The advertisement that started the rush of business

entirely for the track instead of strap iron or steel, as suggested. If he were to build another, however, he says that he would make it four or five feet longer, due to the fact that two cars of long wheelbase on the track at the same time make it very crowded.

When the washing plant was almost completed, Mr. Jay ran up against an obstacle that threatened to make the operation of it out of the question. When he communicated with the local water works company concerning the installation of a main large enough to give him sufficient water when he needed it, he was informed that his bill for the rack alone would be figured on a basis of \$80 a month MINIMUM!

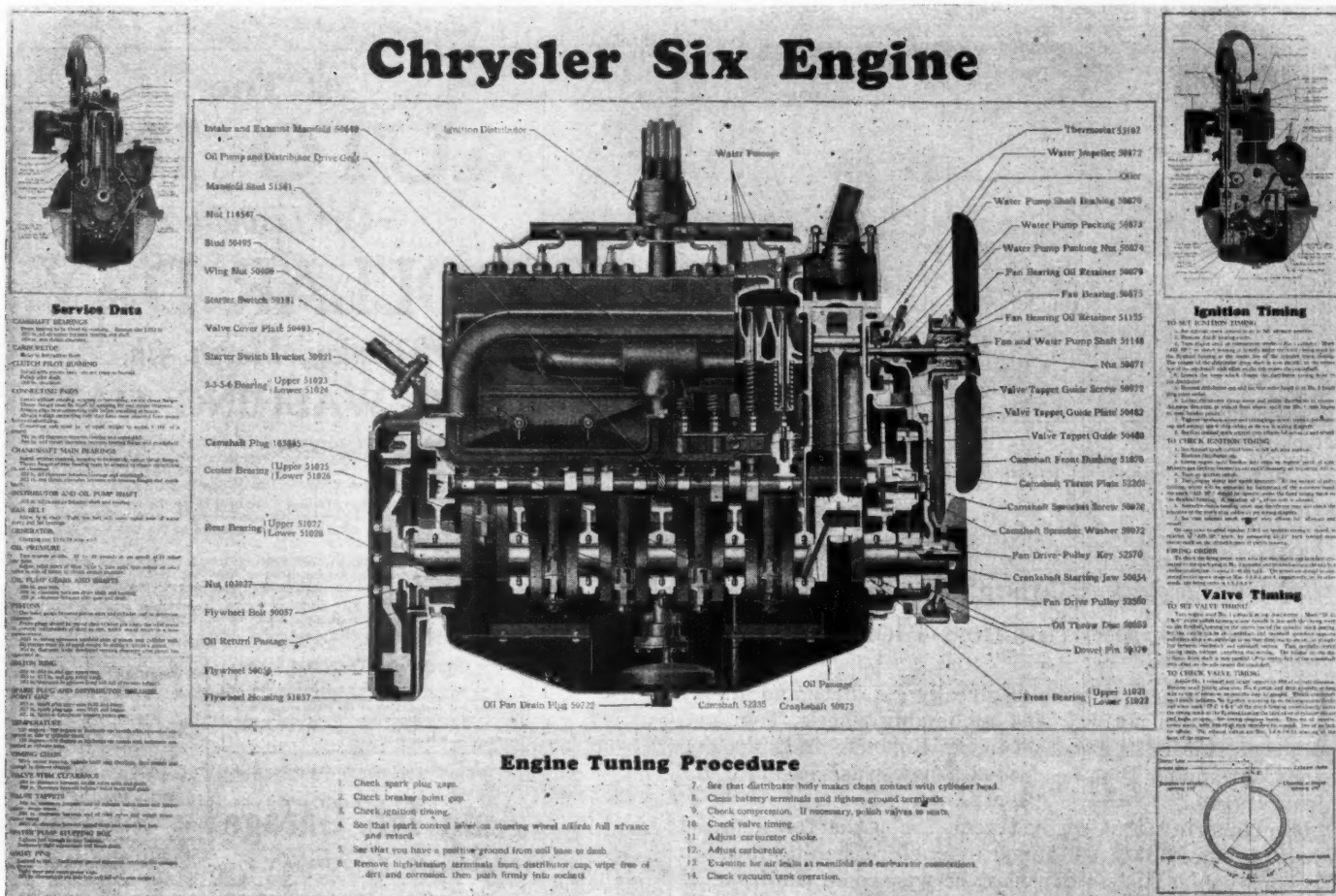
Cost of Entire Plant Low

Fortunately, however, there was a large drilled well on the rear end of the lot and it was found that it would supply plenty of water for the rack. A two-cylinder pump and motor, together with a 525-gallon reserve tank, were installed at a cost of only a little more than \$300. The motor is automatic and keeps the pressure up to 60 pounds, with the result that Mr. Jay gets a better water supply than if he had used city water and at a much lower cost.

In fact, the cost of the entire plant was very low, considering the excellent service it gives, according to Mr. Jay. He says that the total expenditure was not more than \$1,200.

His price schedule is as follows: Fords, \$1.50; other makes, \$2.00; wire wheels, 50 cents extra for four and 75 cents extra for six.

Chrysler Service Chart to Help Mechanics in Shop



IN an effort to standardize service procedure among the mechanics in the service stations of its distributors and dealers, the Chrysler Motor Corporation has considered it advisable to put before the mechanics definite information and make this information so available they cannot miss it. Service manuals in book form have been given up for charts to be placed on the walls of the shop at eye level. The Chrysler company requests its dealers to mount these charts in this position back of glass and thus the mechanics are able to quickly refer to the cross section drawings of the various units of the car.

The first of these charts is shown herewith. It shows besides the large cross section of the engine, two smaller end sectional views and lists the various step by step processes necessary in timing the engine, adjusting valves, etc. The chart measures about 2 by 3 ft. and is, therefore, large enough so the illustrations and text matter can be quite large to be easily read. Other charts covering other major units of the car will be brought out later, the company states.



There Is No Patent on This Medicine

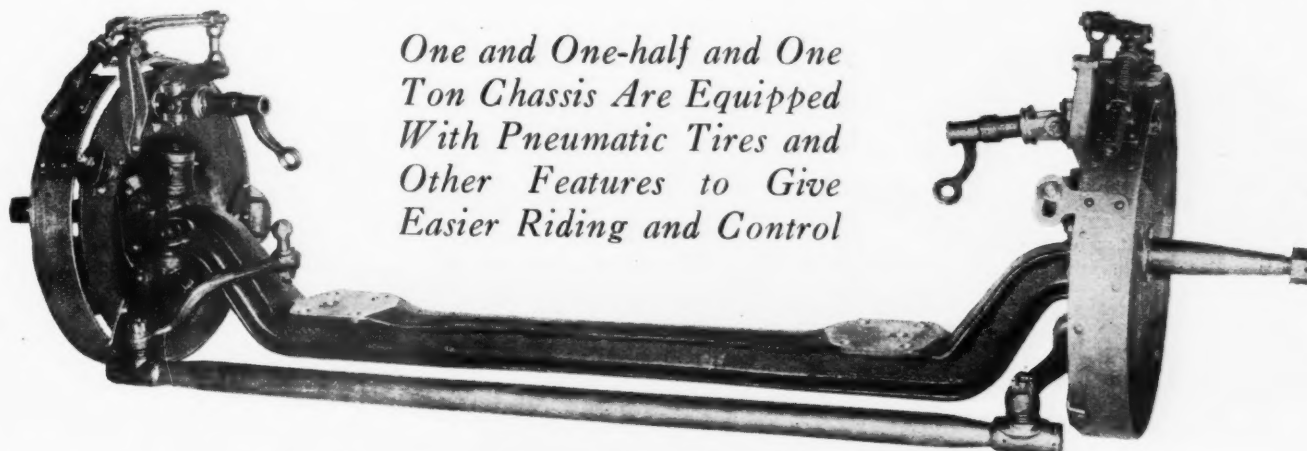
But It Is a Sure Cure for Used Car Evils

CINCINNATI, March 30.—An old remedy in a new bottle is being prescribed for the used-car problem in the Cincinnati territory by Harry T. Gardner, general manager of the Cincinnati Automobile Dealers' Association. It is believed this remedy will work elsewhere just as well as in Cincinnati.

Mr. Gardner has had printed thousands of facsimiles of a bottle bearing the label, "Buyemrite—A Spring Tonic. A sure cure for Used Car Constipation, Red Ink Sickiness, New Car Inertia." He has sent these facsimile bottles to all members of the association for distribution to their salesmen.

In his letter to members Mr. Gardner says: "Permit us to call your attention to the fact that in the United States today there are in use 4,000,000 closed cars and 11,000,000 open cars. With the advent of low-priced closed jobs in increasing quantities—watch your step on open-car trades this year."

4-Wheel Brakes on New GMC Trucks



One and One-half and One Ton Chassis Are Equipped With Pneumatic Tires and Other Features to Give Easier Riding and Control

Fig. 4. Front axle and brakes with one-piece nonadjustable tubular cross link

FOUR-WHEEL brakes have been adopted as standard equipment on two new lines of trucks which are now in production at the plant of the General Motors Truck Co. at Pontiac, Mich.

In addition to this outstanding feature, pneumatic cord tires also are regular equipment. This combination permits higher road speeds and in order to take full advantage of this characteristic, driver comfort has been enhanced by an arrangement of the driving compartment which approaches that of the passenger car.

Of Interest From Service Angle

Liberal use of pressed steel and the installation of rubber insulators at the engine supports have increased ease of handling and reduced vibration.

The complete chassis of the larger unit, which has a load capacity of $1\frac{1}{2}$ tons, weighs 3,643 lbs. with a body allowance of 1,200 lbs. The smaller, or 1-ton chassis, weighs 3,433 lbs. and has a body

allowance of 900 lbs. Model K-32, the $1\frac{1}{2}$ -ton job, has a wheelbase of 154 in. and model K-17, the 1-ton chassis, is 136 in. long between the axles.

Cylinder Block Cast Iron

From the service angle, these two new chassis are of unusual interest due to the duplication of the parts ordinarily requiring service work. All of the major units of the larger job are used also in the smaller truck. Engine, radiator, gear box, tubular propeller shaft and axles are identical, with the exception of the pinion and ring gear in the rear axle. For the smaller chassis this combination has a ratio of 6.1 to 1 as against 7.125 to 1 for the heavier job. As the larger chassis has a maximum governed speed of 25 m.p.h., while the smaller is governed to 30 m.p.h., with an option of 35 m.p.h., the use of the same braking systems is perfectly feasible, as in the first case the combination of heavier load and lower speed is comparable to the reverse of this combination as related to the smaller chassis.

In view of the similarity of the mechanical units, these will be described first and followed by a discussion of the specific characteristics of each model. Inserted cylinder sleeves which have been identified with all of the more recent power plants of this company's product are continued in the new 4-cylinder engine, which has a bore of $3\frac{1}{8}$ in. and a 6-in. stroke and is of L-head construction. At the normal governed speed, which is 1,810 r.p.m., the output of this engine is 37 hp. The cylinder sleeves are machined separately and are inserted at openings in the top of the block. This construction allows for ready replacement of any individual cylinder barrel, or after long service, of all of them without the usual necessity of discarding the entire block.

The cylinder block proper is cast iron and matches with the usual cylinder head, which contains the combustion chambers at approximately the top point of the piston head travel. Rigidity of structure is obtained by carrying the block down to a plane well below that of the crankshaft centerline where a flange is provided for the pressed steel oil pan. In line with the cylinder arrangement, the valve tappets at the right side of the engine are mounted in groups of four in detachable carriers, each of which is protected by a pressed steel cover. High cylinder wall temperatures which are conducive to fuel economy and reduction of crankcase dilution are maintained by introducing the cooling water into the upper part of the jacket. The water pump is at the front end of the cylinder block and is driven with the fan by a cord type belt from the accessory shaft. Therefore the lower portion of the water jacket is under thermo-syphon conditions while the upper is subject to pump circulation.

Full Pressure Lubrication

A centrifugal governor is built into the timing train at the front end and the connections to the governor throttle valve in the intake manifold are enclosed in cast and tubular steel housings. A hot spot is provided at the head of the

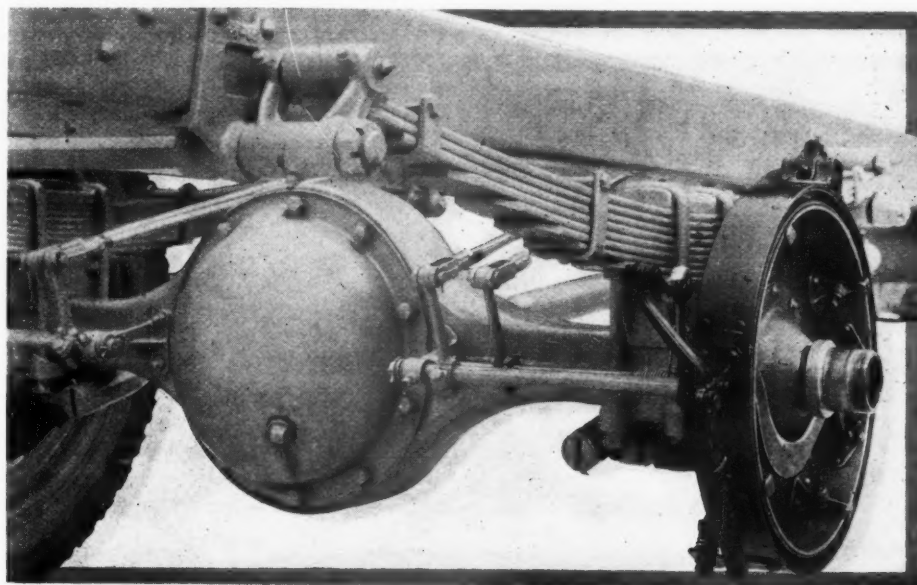


Fig. 3. Banjo type pressed steel rear axle showing details of brake construction

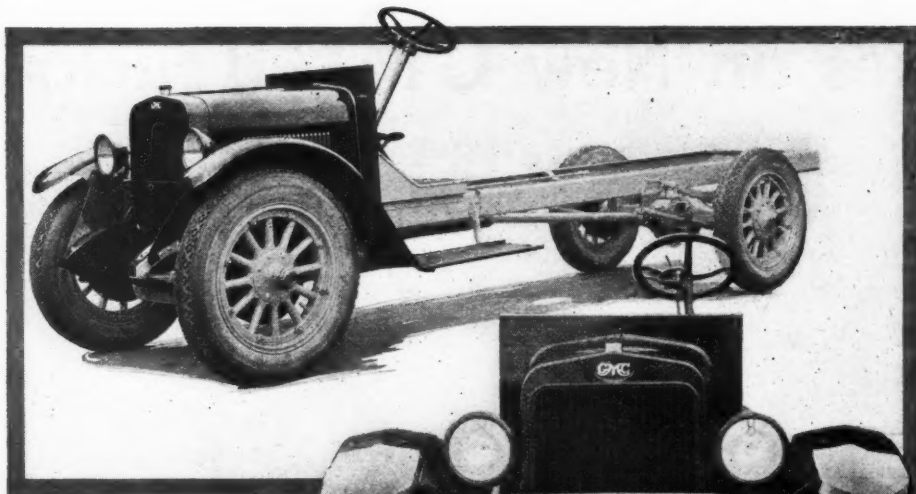


Fig. 6 (above). The new K-32, 1 1/2 ton chassis, 36x6 nonskid cord tire equipment

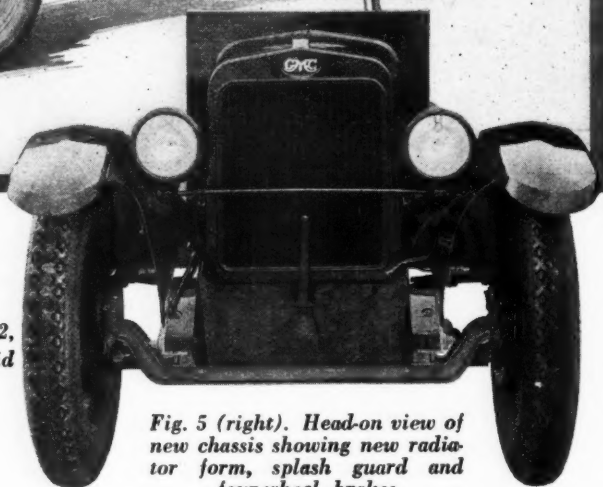


Fig. 5 (right). Head-on view of new chassis showing new radiator form, splash guard and four-wheel brakes

vertical riser of the intake manifold and the carburetor is located rather low in order to eliminate the effects of the turbulence set up at the carburetor throttle valve. As illustrated by Figs. 1 and 2, ignition is by an Eisemann magneto which is driven through a flexible coupling at the rear end of the generator shaft. This unit and the starting motor are both made by Remy. They are located at the left side of the power plant, the latter being placed back of the bell housing and below center. Both electrical units are secured by S. A. E. bayonet connections.

Full-pressure lubrication is utilized throughout the engine and the oil pump with a large strainer located within the pressed steel oil pan. Three bronze-backed, babbitt-lined bearings support

the crankshaft, while the lower rod bearing is cast-in babbitt. The dimensions of these bearings are:

	Dia. in.	Length in.
Front main	2 1/4	2 1/8
Center main	2 3/8	2 1/8
Rear main	2 1/4	2 1/8
Lower rod	2	2 1/4

The piston pin is locked in the four-ring light piston and engages with a phosphor bronze bushing of 1 1/4 in. diameter and 1 5/8 in. length which is pressed into the upper end of the rod. Inserted cast iron bushings at each of the bulk heads in the crankcase support the camshaft.

Unit Power Plant Construction

One of the novel features is the method of engine suspension. As shown in Figs. 1 and 2, the provisions for three point

support on the engine are conventional, but the front or trunnion mounting is modified by the addition of an intermediate rubber ring which is retained by the bracket fastened to the front cross member. No metallic contact is made at the front, and at the two rear supports rubber pads are carried in pressed steel saddles which are riveted to the side members of the frame. The horns on the bell housing bear on these rubber pads. Bolts passing down through the horns, rubber pads and saddles are fitted with rather heavy springs at the lower ends in order to take full advantage of the resilient characteristics of the rubber pads.

As indicated, unit power plant construction is used and the bell housing completely encloses a multiple disc clutch which consists of 5 driving and 6 driven plates. Alternate plates are fitted with woven friction material. A ball bearing which is lubricated from the exterior is used at the throw-out bearing. Ball bearings are also installed at the pilot bearing at the rear end of the crankshaft and at the upper shaft mountings of the gear box. The lower shaft assembly is mounted on roller bearings. The conventional three-speed and reverse gearbox with levers installed at the center position is used. Provisions for pump installation are made at the left side of the gear case and a large hand hole cover at the right side can be removed to accommodate a power take-off. The area of this opening is large enough to allow the removal of the entire counter shaft assembly in service work.

Double-yoke universal joints with hemispherical metallic enclosures are used at both ends of the tubular propeller shaft, which is 2 1/2 in. outside diameter. The same tubular propeller shaft is used on both models, but the K-32, or 1 1/2-ton chassis, has a short intermediate shaft just back of the gear box and an intermediate universal joint which is suspended from a cross member, forming a conventional three-joint construction. In the 1-ton chassis the propeller shaft joins the rear end of the gear box and the axle.

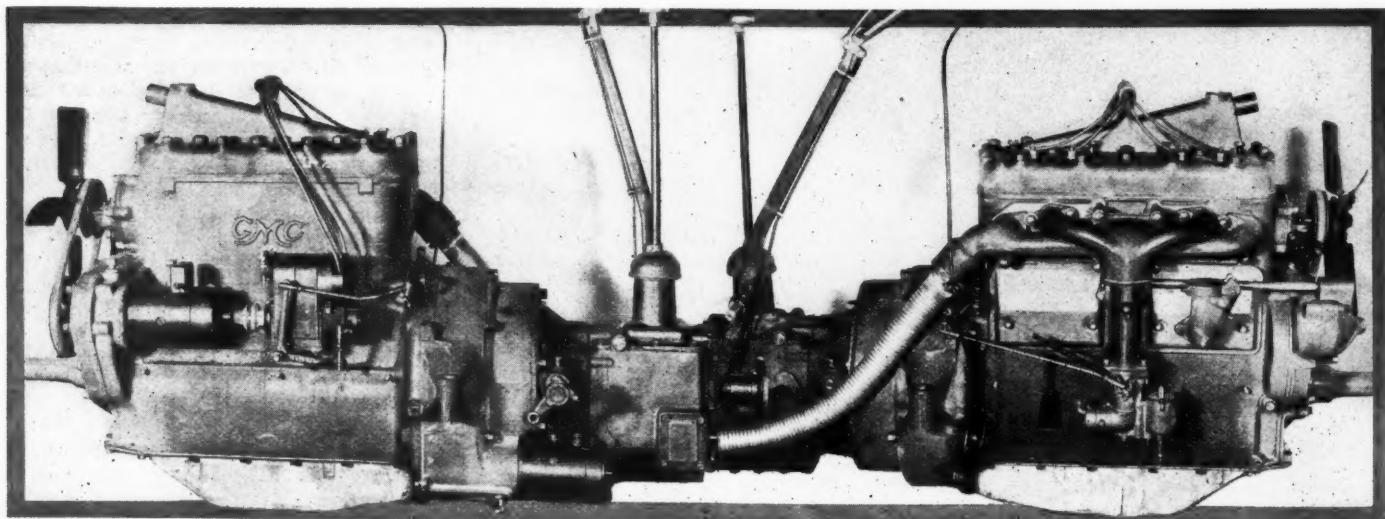


Fig. 2. Left side of engine showing arrangement of electrical equipment

Fig. 1. Right side of new truck engine showing hot spot manifold and enclosed governor connection

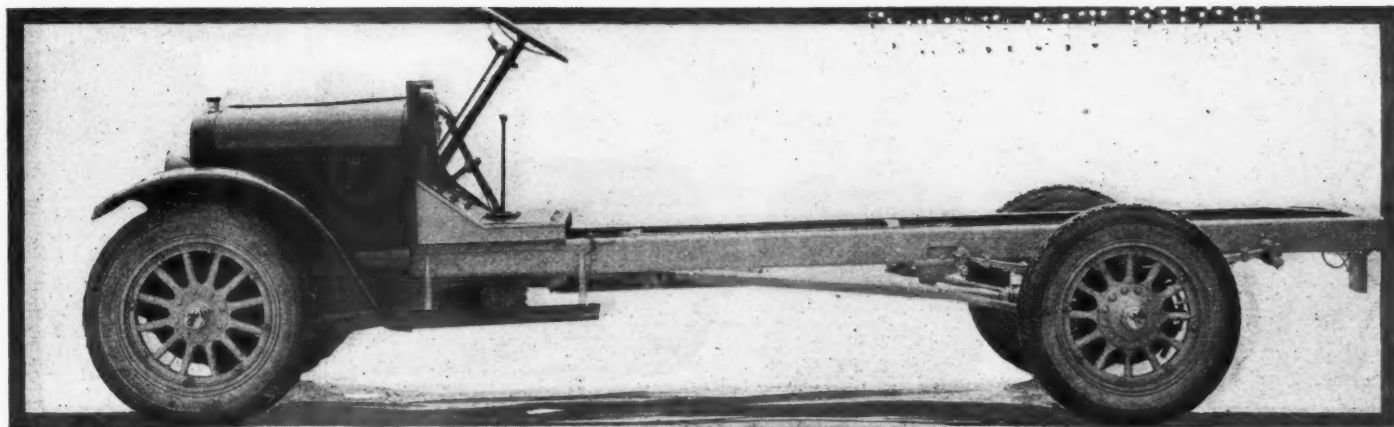


Fig. 7. The smaller K-17, 1 ton chassis which employs the same mechanical units

Another innovation is the pressed steel banjo rear axle, which has a large inspection and service opening at the rear, closed by a light pressed steel cover. The differential is mounted in a carrier which bolts on the forward face of the banjo. Pinion shaft, differential and wheels are all mounted on ball bearings in a three-quarter floating construction in which the chrome nickel live axles have a maximum diameter of 2 in. Ten spline shafts are used extensively in both the rear axle and gear box. Rear wheels are mounted via the intermediate ball bearings on extensions at the ends of the axle and are driven by pressed-on flanges at the outer ends of the live axles. The rear axle housing is substantially rectangular in section and the spring pads are dowelled and clamped on the resultant flat seats by the heavy U-bolts which secure the springs.

Rear Brake Support

As illustrated by Fig. 3, the rear brakes are supported by a stamped steel disc which is riveted in with the wheel bearing extension. As the external or service brakes are identical for all four wheels, the description pertaining to those at the rear will suffice also for the front. The construction of the external brakes is substantially the conventional contracting band type with a 5% wrap in the forward direction at all wheels. The diameter of the service brakes is 16 in. and the width of the bands is 2 in. The actuating levers and adjusting sleeves for the rear brakes are located back of the axle and therefore are accessible for adjustment. The external brake-operating shaft is paralleled by similar shaft for the internal brakes and both are supported in a common bracket at the inner ends.

A continuous steel band replaces the usual expanding shoes in the internal brake. The free ends of the band are actuated by a toggle mechanism which in turn is controlled by a long curved link that avoids the hub and connects with the operating lever at the back of the carrier. As in the external brakes, copper asbestos lining is riveted to the internal bands. The diameter of the internal bands is 15 in. and the width 2½ in.

Front brakes are operated by the usual

universal shaft, which is swivelled in a ball joint at the frame channel and connected to the operating lever on the carrier by a block and trunnion universal joint which is in approximate alignment with the inclined king pin center. Boots are placed over both ends of the floating shaft. An equalizer located just back of the foot pedal divides the pressure applied to the front and rear brakes, but individual adjustment is used beyond this point, that is, no equalizer is used between the two sides of the system. The entire braking system follows practice which has been demonstrated in other units made by the General Motors Corporation.

As illustrated by Fig. 4, the front axle is the conventional drop-forged I section, being 2½ in. deep by 2 in. wide over the flanges. Springs are overmounted and the middle section of the axle is given a decided drop although there is liberal ground clearance under both front and rear axles. King pins are of liberal dimensions and are inclined so that the projected centerlines fall near the centers of the tread at the ground. One piece tubular drag and cross link construction is used and no adjustment is provided on either member. Due to the inclination of the king pins, ball ends are required for the cross link.

Steering by Worm and Split Nut Gear

Steering is by a worm and split nut gear which is attached to the left side channel. The steering column is set an appreciable angle and carries an 18-in. diameter wood wheel at its head. Spark and throttle controls are situated at a quadrant placed just under the wheel. The fin and tube radiator with separate shell is identical on both models. As illustrated by Fig. 5, a new contour has been adopted and appearance is further enhanced by a splash guard between the spring horns. Stamped steel front fenders which are equipped with aprons are carried back to the running boards, the level of which is well below the wheel centers.

Dash, toe board and foot board are part of the chassis equipment. All of the switches, instruments and choke control are installed in a common enamelled box which is placed at the middle of the dash. The length of the deck from the

back of the dash to the front wall of the seat pedestal has been increased by about 4 in. over past practice for the purpose of setting up better seating conditions and improved driver comfort.

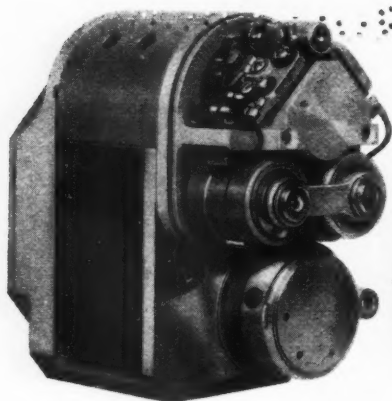
On the K-32 chassis the body allowance back of the seat is 136 in. The side channels of this chassis are pressed steel and are 5½ in. deep, ¼ in. thick and the top and bottom flanges are 3 in. wide. Four pressed steel cross members and rear gusset braces tie the side channels together. This model is illustrated by Fig. 6. Tires are 36x6 non-skid cords all around and a 7.125 reduction is used at the spiral bevel gears in the rear axle. The wheelbase is 154 in. and tread at the front end is 55¼ in. while that at the rear is ¼ in. more.

Spring Dimensions the Same

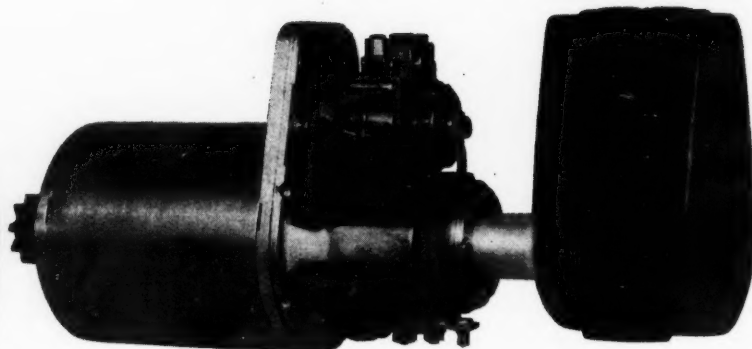
Due to the shorter wheelbase and smaller load capacity, the side channels of the frame of the K-17, or 1-ton, chassis are somewhat lighter than those of the larger models. The depth in this case is 5½ in. and the thickness is ¼ in. and the flange width is 2½ in. Four cross members are used. In this model, the frame allowance back of the seat is 102 in. Tires for this chassis are 34x5 non-skid cords all around, although 36x6 tires fit the same rims and are available at an extra price. Rolled steel felloes are mounted on wood spokes for the wheels of both models.

Spring width and length for both models is the same, although a difference is made in depth and number of leaves at the rear ends. Front springs are 38 in. long and 2¼ in. wide with 8 leaves and a depth of 2¼ in. Both sizes of rear spring are 54 in. long and 2½ in. wide. K-32, the 1½-ton job, has 12 leaves at the rear with a depth of 4¾ in., while the 1-ton chassis has 9 leaves and a depth of 3.2 in. Spring eyes are bronze bushed and no center bolts are used. Spring clips are alloy steel, as are the spring leaves, and the rear springs are mounted in free shackles at both ends.

Standard equipment includes head and tail lamps, the former having auxiliary dimmer bulbs. Self-lubricating bushings are used at all required points in the brake-control system and all necessary lubrication points on the chassis are supplied with pressure gun fittings.



Combination magneto and lighting generator for use on motorcycles



Starting motor with automatic safety switch which prevents starter getting full current from battery until pinion is fully in mesh

New Robert Bosch Generator and Starter

Line Also Includes Combination Magneto and Generator for Motor Cycles and a Small Generator for Bicycles. Generators Incorporate Regulators Which Give Constant Voltage

By P. M. HELDT

ROBERT BOSCH MAGNETO CO., Inc., has entered the market with a line of electric generators and starters, a combined magneto and generator for motorcycles, and an electric lighting set for pedal cycles, the latter comprising a magneto type generator driven by friction from either the front or rear tire.

The feature of the generators for passenger car, truck and bus service is that they are controlled on the constant voltage principle, the regulation being claimed to be so close that it is possible to run the lamps on the generator directly without the use of a battery, if desired. Ordinarily the generator is used with a battery, and constant voltage control then has the advantage that it gives a tapering charge, sending a heavy current into the battery when the latter is nearly discharged and reducing the charging current as a state of complete charge is approached.

Generator Four-Pole Type

The generators are of the four-pole type, but the armatures are provided with a so-called series winding, which calls for only two brushes on the commutator. These brushes are arranged at an angle of 90 deg. with each other below the commutator, making the space above the commutator available for the regulating mechanism. Ball bearings are fitted on the armature shaft.

Voltage regulation is effected by means of a resistance coil in series with shunt field coil, which is cut in and out of circuit by a magnetic vibrator. The vibrator magnet carries both a shunt and a series coil. Any increase in voltage results in more rapid vibration of the regulator arm, and owing to the fact that the generator field has considerable inductance which does not permit the current flow

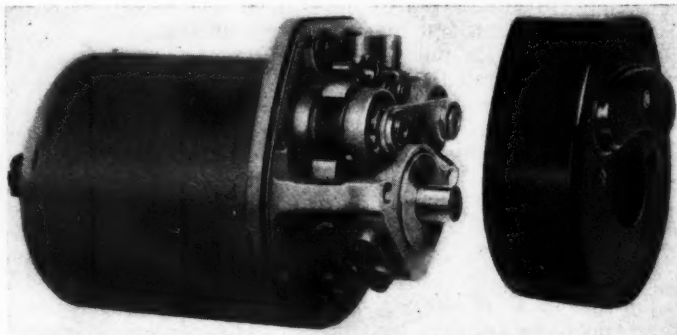
through its field coil to change very rapidly, the average current through the field is less the more rapid the vibration of the regulator arm. The few turns of series winding on the regulator magnet compensate for the drop in voltage in the line accompanying an increase in load. The series current flows around the core of the regulator magnet in the direction opposite to that of the shunt current.

The usual battery cut-out is provided, and this is an exact duplicate in external form of the voltage regulator. Regulator and cut-out are mounted side by side on top of the commutator housing, being held in place by means of a clamp so that they can be quickly removed for inspection or repair. A stamped metal cover protects the commutator and control devices, being clamped to a flange on the commutator end bearing and having a packed joint with a flange formed on the end plate of the generator. A diagram of connections of the generator is shown herewith.

For Six and Twelve-Volt Circuits

A feature of the generator which is an aid in replacement business is that changes necessary to allow for a reversal in the direction of rotation can be easily made. This calls for a reversal of the field connections. The two leads of the shunt field coil have red and green insulation, respectively, and their connections are located close together on the commutator end plate. Arrows on this plate, which are also colored, indicate the direction of rotation corresponding to each method of connection.

Generators are made for both 6 and 12-volt circuits and in a considerable range of outputs, as follows:



The generator with cutout and regulator mounted under the protection of the commutator cover

TYPE E, 6 VOLTS, 30 WATTS.

TYPE EL, 6 VOLTS, 45 WATTS.

TYPE J, 6 AND 12 VOLTS, 60 WATTS.

TYPE JVA, 6 AND 12 VOLTS, 75 WATTS.

TYPE K, 6 AND 12 VOLTS, 80 AND 100 WATTS.

TYPE O, 6 AND 12 VOLTS, 130 WATTS.

TYPE QVA, 6 AND 12 VOLTS, 225 WATTS.

In the starters, use is made of the magnetic shift principle. When at rest the armature is not centrally within the field poles but is moved partly out of the so-called armature tunnel by means of a coiled spring. There are two windings on the field poles, the regular series winding and an auxiliary winding of many turns and comparatively high resistance. When a started button on the dash is pressed the circuit is closed through the auxiliary winding and through the armature, a powerful solenoid action is exerted on the armature core and it is drawn into the armature tunnel. At the same time the armature begins to turn over, but only at a low speed. The simultaneous axial and low speed rotary motion make meshing of the starter gears positive.

At the same time the circuit is closed through the auxiliary field coil, the coil of the automatic switch is energized and this coil then tends to close the circuit through the main field winding. However, it cannot do this until after the armature has moved a certain distance in the axial direction, at which point the drop lever of the automatic switch, which holds the switch in the open position, is released. This protects the motor against heavy currents when the pinion and gear are not fully meshed. Shocks of meshing are relieved by providing a cushion spring between the armature shaft and the starter pinion.

As part of the complete electrical equipment the company offers a combination starting, lighting and ignition switch, which is of the locking type and is mounted on the instrument board. This switch has a lever for switching on the lamps either singly or in various combinations; it carries a pilot light, which takes the place of electric indicating instruments and shows whether the system is working properly; it is provided with a key and in addition carries the fuses, a socket for plugging in a trouble lamp, the starter switch button and

the cable terminals. When the pilot lamp is lighted it is an indication that the battery is supplying current to the various circuits. For instance, if the car is in motion and the pilot lamp is lighted, it shows that the voltage of the generator has not attained a value sufficiently high to operate the battery cut-in, or else that the generator circuit is out of order. If the pilot lamp is lighted while the engine is at rest it serves as a warning to the operator to shut off his ignition.

Headlamps Parabolic Type

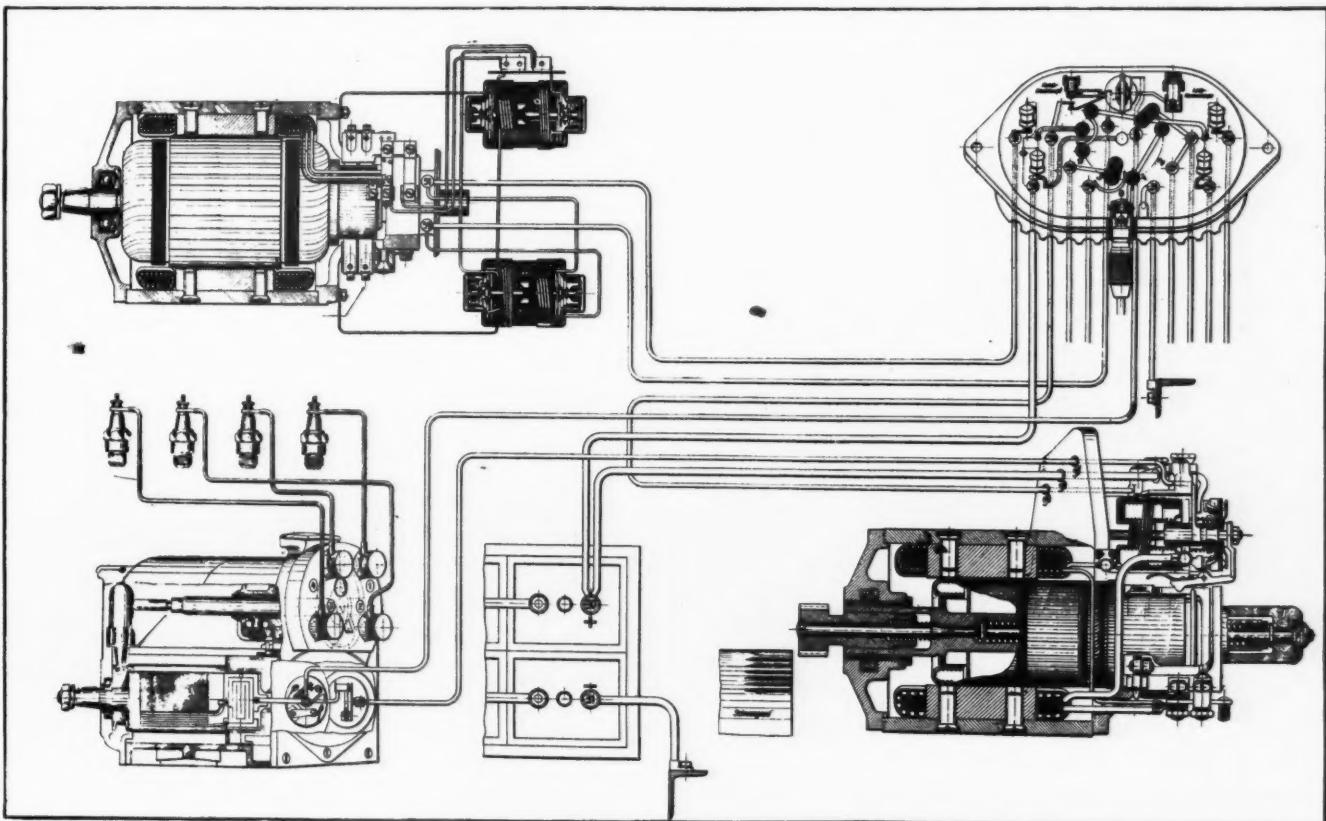
By means of the switch key it is possible to lock the magneto switch in the short-circuit or "off" position, to lock the lamp switch in any position and to lock the starter switch button so that the starter cannot be tampered with in the owner's absence. This switch is made in two types, one with four positions, which does not permit of switching on the headlamps and side lamps simultaneously, and another which permits of doing this.

The head lamps supplied with this equipment are of the parabolic type and come in four reflector diameters, substantially 6¾, 8, 9½ and 11 in. It is claimed that the joint of the cover is such that no dust or water can get to the reflector and that the latter therefore never requires to be polished. The lamp socket, instead of being mounted in the shell, is mounted directly in the reflector, by means of a special bayonet type locking device. This socket takes only bulbs with a special base.

The side lamps are of the same general form as the head lights and come in two sizes, of 2¾ and 4¾ in. reflector. For these lamps bulbs of tubular shape with a consumption of 10 watts are furnished.

Another new product is a combined magneto and generator for motorcycles. The generator is of the four pole type and has constant voltage control by means of a magnetic vibrator.

An interesting novelty is an electric lighting set for pedal bicycles. It comprises a four pole alternating current generator of the magneto type, that is, with permanent fields. Sufficient voltage is generated to give light when the rider walks beside his wheel at 3 m. p. h., and the voltage is kept within permissible limits up to speeds of 15 or 18 m. p. h.



Wiring for new Robert Bosch electrical equipment. Upper left: The generator with regulator and cutout. Lower left: Magneto. Lower right: The starter with shifting type armature and automatic safety switch. Upper right: combination ignition and lighting switch

Claim Murcote Lacquer Can Be Rubbed As Quickly As Ordinary Varnish

Ability to Retain Pigment Content After Car Body Has Been in Service Some Time Feature of New Product

EASE of rubbing and ability to retain pigment content so that it will not rub off after a car body has been in service for some time are two of the important objectives which are said to have been attained in the production of Murcote lacquer, a new product announced recently by the Murphy Varnish Company, Newark, N. J., a concern long well known in the automobile finishing trade.

Inasmuch as time and labor consumed in rubbing are an important factor in production work, the Murphy Company determined, if possible, to make a lacquer finish which could be rubbed as quickly and easily as ordinary rubbing varnish and it is claimed that this result has been secured.

Metal Surface Must Be Clean

It was decided also that the practice of loading the finishing material with so much pigment that the latter will rub off easily in service should be avoided. In consequence much less pigment is employed than is used in some other lacquer finishes, although equal covering ability is claimed. This is said to be due to better "maceration" in the manufacturing process and is claimed to result also in a greater depth and brilliance in the finish. Discharge of pigment has not been entirely prevented with certain pigments which react chemically, but it has been minimized even in these cases.

In production work, as in refinishing, it is necessary to see that the metal surface to be finished is chemically clean. It is recommended that it be washed with gasoline, then with Murcote cleaner and finally with alcohol. Murcote primer then is brushed or sprayed on and air dried for 24 hours or force dried for 3 to 4 hours at 175 deg. Fahr. Temperatures up to 250 deg. Fahr. can be used if desired. The primer is red oxide with inhibitive varnish base.

When the priming coat is dry it is followed by Murcote spot glazing, applied with a knife and air dried 4 hours or force dried in 1 hour at 175 deg. Fahr., after which it may be sanded if desired. Two coats of Murcote priming surfacer then are sprayed or brushed on and each is air dried 24 hours or force dried 3 to 4 hours at 175 deg. Fahr. The second coat of surfacer should be sanded either wet or dry, preferably using a good grade of naphtha. If water is used, the surface, of course, must be dried thoroughly before succeeding coats are applied.

Before applying the first of the pyroxilin coats, a coat of Japan color mixed

with a small amount of Murphy's overnight finishing or 00 Sealer used as a binder may be used if desired. This not only acts as a sealer, but aids in bringing up a uniform color and facilitates patching in case of rubbed-through spots or mars. This coat is used frequently in production. It is sprayed on and air dried 6 to 8 hours or force dried 1 hour at 175 deg. Fahr.

The body then is ready for the lacquer coats. Murcote is furnished in heavy body and is thinned with Murcote thinner to the desired consistency, depending partly upon the color. One part thinner to three of Murcote is safest, but more thinner may be added to facilitate working.

It is recommended that at least three

coats of Murcote be applied. The first and second of these can be applied one after the other without waiting for drying, but it is recommended that one hour air drying or a few minutes force drying be allowed between the first two as well as before the third coat. When the final coat is thoroughly dry and a polish is desired, it is rubbed with fine pumice or finest sandpaper and naphtha.

The body then is sprayed as wet as possible with Murcote thinner and when dry it is rubbed with rottenstone or any good lacquer rubbing compound. Touching up can be done with a hot spray or brush, after which striping can be done with either Murphy's striping color or lacquer type Murcote striping and a final polish given.

Jewett Roadster of the Rumble Seat Type

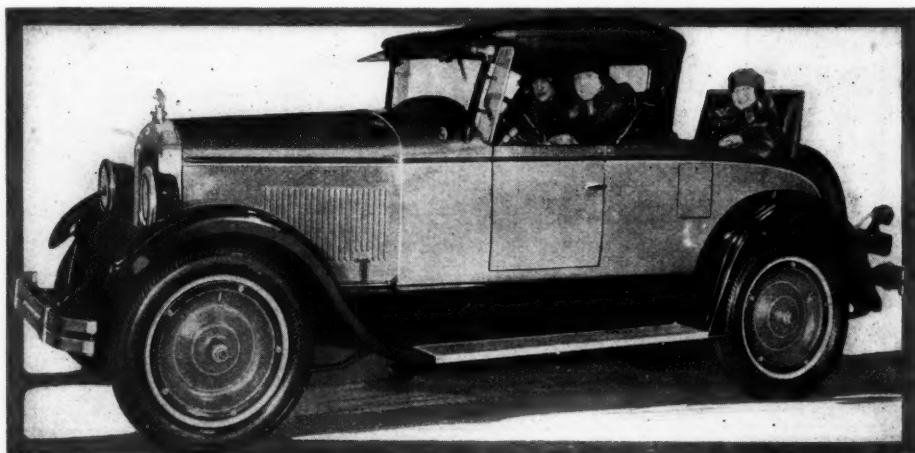
A new roadster has been added by the Paige-Detroit Motor Car Co. as an addition to its line of Jewett cars.

The car is low and speedy in appearance. The finish is in two tone gray. Doors are snug fit and there is a glass visor to shade the one-piece windshield. Short scuff rails of the deck just back of the top protect the finish where the top folds down.

Under the deck is a full-width folding seat bringing the capacity up to five passengers. Steps on the fender and bumper

make access easy. Should it be desired to drive with top up, the back curtain may be removed. A golf compartment, entered on the left side of the deck carries the sticks or other small objects. Four-wheel brakes or steel wheels are optional, otherwise complete equipment is furnished.

This includes five 31 by 5.25 balloon tires, combination stop and tail light, spring bar bumpers front and rear, sidelights on cowl, automatic windshield wiper, rear view mirror, sun visor. The price is \$1,630 f. o. b. Detroit.



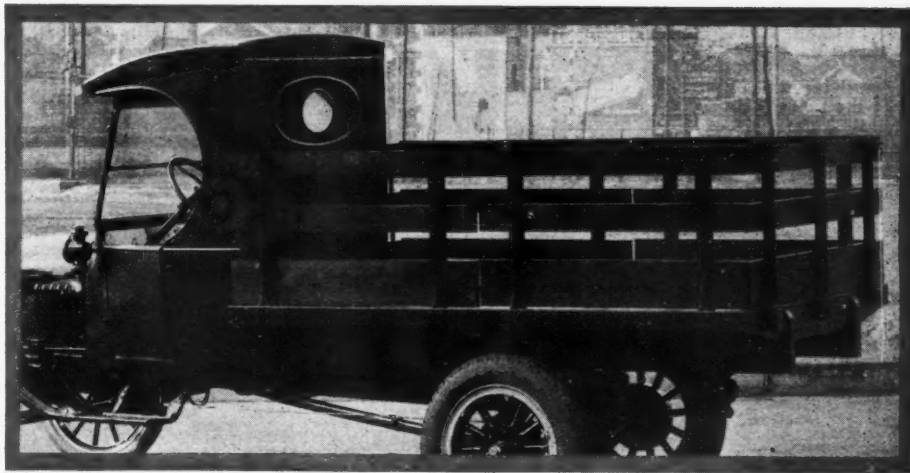
The new Jewett roadster which sells for \$1,630, f.o.b. Detroit. Under the deck is a full-width seat for two passengers

Ford Motor Company Adds A Stake Body on Truck

THE Ford Motor Company has added a stake body to its 1-ton truck equipment and distribution has begun through the dealer organization, it is announced. Introduction of the stake body follows that of the all-steel cab and body brought out some time ago.

The new body not only meets many commercial requirements, but also is designed to fill the needs of the farmer or truck gardener in handling his products. In addition to the stake sides, provision has been made so that cattle or grain sides may also be used, making the body one of wide utility.

Except for floor and rack boards, which are constructed from seasoned wood, the body is all-steel. The floor space is 5 ft. wide and 8 ft. 2 in. long, sides rise 26 in. above the floor.



The new stake body brought out by the Ford Motor Company for its 1-ton truck

Swan Fuel Distributor and Booster for Fords

THE Swan fuel distributor and Booster for Ford cars incorporates the new principles of Swan manifolding previously described in these columns.

Claim Uniform Mixture

It is claimed the Swan fuel distributor delivers the same quantity and quality of mixture to each cylinder. On the other hand, with ordinary manifolds the carburetor often has to be set rich enough so the "leanest" cylinders will fire regardless of how much excess fuel goes into the other cylinders. This excess fuel is not only wasted but causes trouble and expense in the form of carbon, fouled plugs, crankcase oil dilution, piston and cylinder wear, etc.

Briefly, the Swan fuel distributor is unlike any other manifold. Instead of the customary sweeping curves into the cylinders, it breaks abruptly at right angles. This tends to keep the mixture turbulent and actually better carbureted than when it left the carburetor, it is stated. In addition, the flat sides of the

Swan distributor keep the mixture from collecting in pools within the distributor proper.

A patented "booster" is placed just between the carburetor and distributor where heavy particles of fuel may collect

at low speeds. This "booster" atomizes these puddles of liquid and sprays them back into the air stream. This is accomplished by the means of a simple but effective air nozzle. As a result, starting is easier and better idling is assured.

25 Years Ago In the Automobile Industry As Recorded In MOTOR AGE

(From MOTOR AGE of April 5, 1900)

Many Good Roads Dinners

NEW YORK, April 1.—Over 60 seats have already been taken for the dinner of the Automobile Club of America is to give Gen. Nelson A. Miles and his fellow members of the transcontinental highway commission at the Waldorf-Astoria on Monday evening.

Bostwick Not Chosen

NEW YORK, April 1.—It was expected that at its meeting on Tuesday the Automobile Club of America would select Albert C. Bostwick as its representative at the challenge race for the Bennett International Cup in France on June 14, but a surprise was sprung on the young millionaire automobile fan and his friends among the directors by the nomination and election by a small majority of Clarence Gray Dinsmore and John H. Flagler as alternate.

Automobile Stage Lines

The present indications point to the automobile becoming a great factor in the economy of public transportation in the very near future. Leaving out of consideration of the question the automobile public cabs, which are already numerous in several of the larger cities, there are a number of stage lines being projected and some already in operation.

The Baltimore & Ohio Railroad has adopted them for service in Washington and expects to enlarge the system, to embrace other cities.

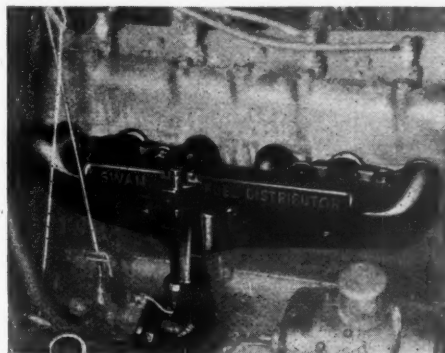
Franchises have been granted in Boston, Chicago and several other large cities for motor-vehicle stages.

The First Motorcycle Store

BOSTON, Mass., April 1.—The Hub now has what it claims is the first motor tricycle store in the country. It was opened formally to the public last Wednesday by Kenneth A. Skinner at 268 Massachusetts avenue and a full line of the De Dion product, including a Voiturette, was inspected by a big throng of Bostonians.

To Represent Locomobile

Eddie McDuffee, the great bicycle pace follower, has arranged to open a store for the Locomobile Co. of America at Fifth avenue and Forty-second street, New York, and will be ready for business by April 5. Mr. McDuffee says that it is not essential now that he ever ride a wheel again, but believes that the present season will be one of the best ever known. He will return to the track providing he sees prospect of enough money, leaving his business for the racing season in the hands of others.



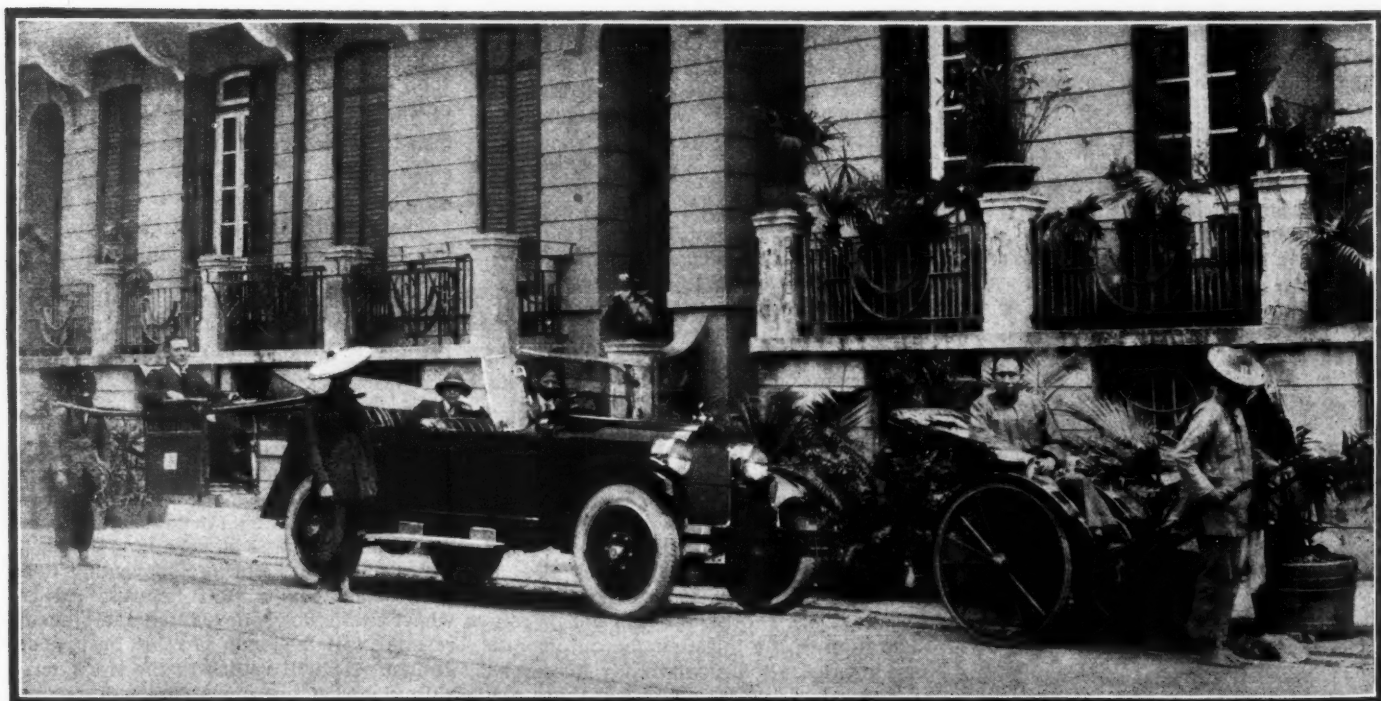
Swan fuel distributor

MOTOR AGE'S PICTURE PAGES



HARD HIT. Ruins of a garage at De Soto, Ill., in the path of the terrific tornado which devastated parts of three states. The automobiles appear to have withstood the shock better than the building.

FIGHTER BUYS BIG BUS. William L. "Young" Stribling and his new \$9,500 bus he has bought to travel around in for his fights. It is 23 ft. long and 7 ft. wide. It is said that it has all the conveniences of a home on the road. The boxer's mother is shown with him.



THE MARCH OF PROGRESS. Three modes of conveyance in China—ten centuries of Oriental transportation in striking contrast lined up before the Shanghai hotel. The automobile is a Willys-Knight

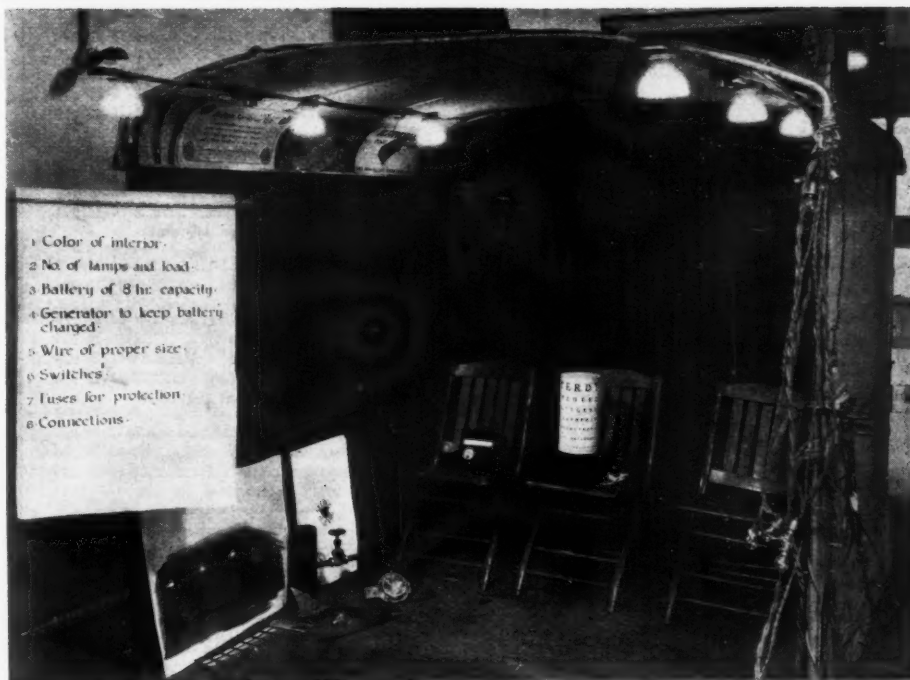
OF AUTOMOTIVE INTEREST



FROM '49 to '25. Chester N. Weaver Co. of San Francisco staged a parade during the second showing of "The Covered Wagon" there and presented an effective contrast with late models of automobiles. A number of Studebakers of varying vintage, as well as exact reproductions of the covered wagons used in '49, and some real Indians, were featured. The stunt was so successful that other California dealers have copied it.



NEW AUTOMOTIVE CHIEF.
A. R. Glancy is the new president of the Oakland Motor Car Co. He formerly was assistant general manager



THE COVERED WAGON. This device is used by A. C. Roy of the Edison Lamp Works of The General Electric Co. in demonstrating proper methods of bus lighting. The chart at the left shows the essentials of good lighting. On the floor at the left is a cardboard model with slider illustrating good and bad illumination. Next to it are two large pipes connected by a small one, illustrating need of switch capacity comparable with wire size. Behind that, a bull's eye light with words, "Seeing is believing." When the light is on, these words can not be read. This illustrates detrimental effect on value of advertising cards when non-glare lamp fixtures are not used. Cylinder on center chair rotates slowly to illustrate extra light needed to compensate for jarring of newspaper. Strings of lights at side show dimming effect of small wire

The READERS' CLEARING HOUSE

Questions and Answers on Dealers' Problems

BUILDING - ELECTRICAL - FLAT RATES
SHOP - LEGAL - PAINT & TRIM - ACCOUNTING

No. 4 Continues to Score

Q.—We overhauled a Ford car early last summer and lapped in .0025 oversize piston new rings and allowing the regular clearance. Car was well run in for 1500 miles after which the cylinder head was renewed to remedy a leaky gasket. Cylinder walls at this time were nice and smooth, but after a few weeks the car came in again with No. 4 cylinder wall and piston scored. The owner having no knowledge of how it happened as he is a careful driver and carries plenty of oil. We lapped out the scored cylinder and put in a new piston with plenty of clearance, lapping in concentric Ford special rings, allowing .006 clearance, also using Apex inner rings. The car was carefully run in and worked fine.

The other day the car came in for grinding the valves but we see that the No. 4 cylinder is scored again. Can you give us the cause of the No. 4 cylinder scoring as the car is driven very carefully with plenty of oil? Also what would be the best way to repair the scored cylinder wall? Also what clearance would you recommend on rings at the top of the cylinder when they are tapered?—Wisconsin Subscriber.

Skirt Portion of Piston May Have Been Reduced in Size

If the new pistons are lapped directly into the cylinder it is possible and probable that the skirt portion of the piston was reduced in diameter so that when the piston was given its correct diametral clearance at the skirt there was not enough clearance at the rings and under the influence of the heat of combustion the ring lands expanded sufficiently to seize and score. Another possibility is that the piston rings were fitted at the top of the cylinder and in the case of a tapered cylinder it would be possible to have too little clearance when the piston was at the point of smallest diameter of the cylinder bore.

As the No. 4 cylinder has been scored twice it will probably require the removal of several thousandths of an inch of material with the possibility that a piston to fit this particular cylinder will be considerably heavier than those in the other cylinders thus throwing the engine out of balance unless the No. 4 piston is reduced in weight by the removal of metal at the bottom of the skirt. If the cylinder bores are tapered more than .003, which we are inclined to believe is the case, it would be advisable to rebore or regrind all cylinders.

A list of firms supplying score filling machinery and compound will be supplied you by separate letter.

In regard to fitting rings to cylinders that are tapered it is always necessary to fit the ring clearance at the point of smallest diameter on the stroke portion of the cylinders.

Motor Age Readers' Clearing House Index

For March Issues

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means the article is in the March 12, 1925 issue of Motor Age on page 25.

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Adjusting Packard Chain

Q.—Kindly advise through the Reader's Clearing House Department the proper method of taking up slack in the timing chain of a first series Packard twin six. This model appears to differ from later models with regard to the proper procedure.—W. W. Bissell, Zeoring, Iowa.

The chain adjustment on both the first and second series twin sixes is identical and we are accordingly giving you a technical letter supplied by Packard which covers this adjustment for the second series. First remove the lock holding the eccentric and the eccentric clamp nut. The two locks are both held in place by the stud and nut on the crankcase arm just above the generator shaft. Turn the clamp nut slightly until one of the holes on its circumference lines up with one of the holes in the eccentric and lock the two together by means of a pin which will engage both.

Rotate Clamp Nut By Means of Hook Spanner Wrench

Next rotate the clamp nut by means of the hook spanner wrench in the tool kit, until the desired chain tension has been obtained. There should now be a total upward and downward deflection of the chain, measure by removing the inspection plug, of not less than 1/2 inch and not more than 13/16 inch. The pin may then be removed, the clamp nut tightened and the lock replaced. Although it may be necessary to move the eccentric slightly to engage the lock the adjustment is fine enough so that the chain tension may be kept within the desired limits.

Q.—In a number of well-known cars the offset piston pins are located with the thick side to the left when viewed from the driver's seat. Does this not result in increased thrust angularity as well as greater tendency for the piston to "cock" on the explosion stroke?

We cannot testify as to the practical results of it and can give you only the theoretical considerations. As stated by the firms using the offset piston construction is that it has the effect of bringing both the center of gravity and the center of gas pressure outside the piston pin center, thus enabling both the inertia load and the gas load to exert a couple on the piston which will tend to counteract its rotation in the cylinder about the piston pin center. It is recognized that the offset pin construction is most effective at low speed and diminishes in effectiveness as the speed is increased.

Q.—On which side of the center line is an offset crankshaft usually located?

To the right when viewed from the rear.

Planning Your New Building

By TOM WILDER



Do Not Build On a 35 Foot Lot

Q.—I am attaching hereto a rough sketch of a lot on which I expect to erect a one-story garage, size of lot is 35 by 105 feet. I would like to have a few suggestions from you as to the arrangement of same.

Gasoline pump in front of building.

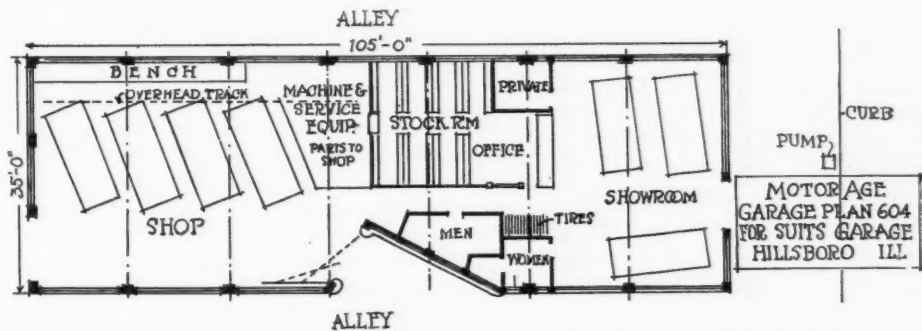
Parts and accessories and general office. Ladies' rest room, also small private office.

A four car work shop, with drill press, emery stand, arbor press, engine stand, and overhead track.

Sides and rear end of building to be concrete block; what material would you suggest for front? Also what height ceiling? How many windows and should there be any skylights? Suits Garage, Hillsboro, Ill.

Offhand we would have said that your lot was too small and especially too narrow to make any kind of a passable layout, but we are surprised to find that we have been able to get in all the points you wish to include although we must admit there is no room to spare. There is no room for cars other than the four you are working on and should you have a rush of business there would be no way to take care of the extras except to park them in the alleys. There is besides no room for demonstrators or for a trouble car.

Since this building is essentially a



This is an exceptionally good layout for so narrow a building—they are impractical at best.

work shop and you have an alley on both sides we would suggest that you make the rear end of it almost entirely glass, the trusses should measure about 12 feet from the floor and the glass should extend from a point three and a half feet from the floor to the underside of the trusses. If this is done no skylights will be necessary. The showroom, of course, should be glass all around but the intervening section should not need so much light although a uniform treatment of the whole wall surface would not be out of

the way. Steel sash are used almost universally now for this purpose.

In spite of the fact that this seems to be a pretty good layout we believe you are making a mistake in putting up so small a building, and believe you will no more than get started before you decide you will need more room. If the length were as it is and the width were 50 to 60 feet instead of 35 feet, everything would be fine. Buildings 50 feet wide are as narrow as should be used for garage and service station purposes.

Legal Questions Answered—

By WELLINGTON GUSTIN
of the Chicago Bar

Negligence Creates Liability

Q.—I happened to be in an accident on Oct. 12 and I cannot get any damages so I want your opinion.

I have drawn a diagram so you may see how it happened. Car A is going north following a Ford coupe. A car stops ahead of Ford coupe, causing it to stop because of oncoming traffic, and car A has to stop too. In stopping car A stops directly opposite a side road to left in village. A Ford roadster, car B, is coming slowly in low on to the main high. Car C is leading the parade south at a speed of about 25 miles per hour. Car B keeps on coming into main highway and car C, day-dreaming or something, fails to see it in time to stop, so swerves left to avoid car B and in doing so sideswipes car A. Car B has come directly crosswise in road and car C hits it just after sideswiping car A and knocks it across interurban car tracks. This is a correct version of the accident, exactly as it happened. And the kick of it all is I own car A, the innocent bystander.

I went to the owner of car C. They carry a liability policy and they had already put in THEIR account of the accident and had barely mentioned my car. They referred me to the insurance company.

Now, what I want to know is, What is a liability policy? And why? If it doesn't

protect the damaged car what kind of a scheme is it? These are the facts so far and I should like to have your advice as to how to secure damages. If the insurance company refuses to pay can I go to the owner of car C and demand money? My damages amount to \$19.65—two fenders, a tire, a fender iron and a running-board tool box and installation labor. I'm getting tired of repairing a tire and listening to rattling fenders but I can't buy them?—A Reader.

When one refuses to pay for the damages he has caused by his negligence, then the only resort is to the courts. And once the question of negligence is presented it is usual that a jury is left to say whether the particular facts involved show negligence of the defendant.

Now car A appears to be not guilty of any negligence. If C was guilty of negligence as you infer, and if at the time of the injury to A, C was speeding in violation of the state or local law, that fact would show C guilty as a matter of law, for violation of a statute at the time of an injury is prima facie negligence as a matter of law. But if C was not guilty

of any negligence causing or contributing to the injury to A, then A must look to B as the cause of his injuries, though it was C that actually struck A. Now, of course if C was "day dreaming" as you suggest, he would be liable too, as one is required to keep a vigilant lookout ahead and see the road ahead. If you are forced to sue you might name both B and C defendants, and the facts produced at the trial might show one or both to be liable to you. But a release of one joint tortfeasor releases all joint tortfeasors.

As for the insurance policy, that is carried for the protection of the insured. That is, if you should get a judgment against C, then this party could recover from the insurance company his loss. So to prevent this, the insurance company usually comes forward to pay damages or to fight a case as best serves their interests. As far as you are concerned, you can demand from C alone and you can sue C in law only, for you are not a party to any insurance contract.



Clearing Up Electrical

EDITED BY A. H. PACKER

Testing Ford Magneto Winding

Old stuff, you say? Not exactly. It's trouble shooting on a Ford magneto, but it explains testing of field coils and gives a hint on finding the location of a ground. See if you can apply this test to a generator field, send in your sketch and we will check you on it.

Q.—We have a Ford engine which will not run on magneto, although it runs all right on battery and runs all right using magneto current from another Ford car. We thought that there must be a cotter pin causing a short circuit, but we took off the transmission cover and later took out the engine without finding anything of this sort. The magnets are o. k. and have good pull and are all properly located. The field coil seems to be perfect as far as we can tell. We do not know whether new magnets or new field coil would remedy the trouble or not.—Elberta Motor Co., Elberta, Utah.

The trouble is either due to weak magnets, magnets improperly replaced, or to ground or open circuit in the field winding. From your description we feel that a ground is the most likely cause of the trouble. A ground might be due to a cotter pin jammed in between the field coil and the magneto coil support so as to make an electrical connection. It might also be due to the tape being rubbed from one side of the coils so that the copper strip makes contact with the magneto coil support on which it is located.

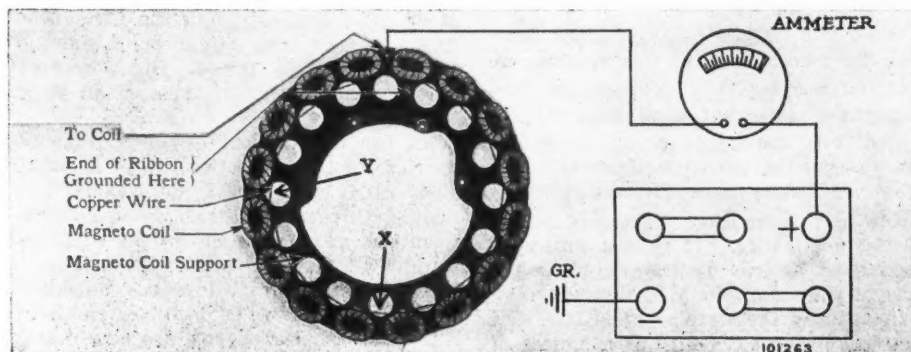
We believe that the next thing to do would be to use the MOTOR AGE remagnetizing process as shown on page 26 of the March 12, 1925, issue. After this has been done it would be well to leave the flywheel in the last position which was used and then connect up a 6-volt battery instead of the 24 or 32-volt battery which had been used in recharging. As the normal resistance of the magneto coil is about $\frac{1}{2}$ ohm, you should get about 12 amperes through the winding as indicated on the ammeter when using a 6-volt battery.

Suppose, for example, that at the point marked X on the magneto coil circuit there should be a ground, so that current from positive battery going through the ammeter would go through the eight coils at the left and then to the frame of the magneto coil support. This current could then return to battery and would not have to go through the other eight coils at the right. With half as much resistance to go through we would have twice as much current so that if the ammeter indicates about 24 amperes instead of 12, you would suspect trouble at the bottom of the magneto coil assembly. In similar manner, if the ammeter should show four times the normal current, or about 48 amperes on 6 volts, you might suspect trouble at the point marked Y. This is an approximate way of locating the trouble.

Might Have to Tear Down Engine

Current much in excess of 12 amperes shows a ground which the charging process has not been able to burn out and indicates that it will probably be necessary to tear the engine down to repair the trouble. If this becomes necessary it will be possible to disconnect the winding at various places and also disconnect the grounded end of the coil circuit and use a 110 volt test circuit with a lamp in series with one of the leads to check for ground. One test point should be put on the copper strip and the other test point on the magneto coil support. It may be necessary to disconnect the coils to tell which one is grounded.

Excessive end play in the crankshaft will also cause trouble in trying to start on magneto, even with magnets and coils in good condition. End play is removed by installing a new rear main bearing cap.



Checking circuit resistance to test for ground. How would you make this test with a generator?

No Such Thing as D. C. Transformer

Q.—How can I make a transformer to operate on a 6 volt storage battery and produce three amperes at twelve volts?—William Alswager, Courtenay, N. D.

Transformers can only be used with alternating current and as a storage battery produces direct current there is no way of using a transformer in connection with it. If you will tell us what you wish to accomplish perhaps we can find some other way of doing it.

ODD GENERATOR NOT READILY APPLIED TO A FORD

Q.—I have a Saxon touring car, model S-2, No. 17201, which I am figuring on turning into a truck. Would like to have a wiring diagram of this car and also your advice as to whether the generator and starter could be used on a Ford which has no electrical equipment.—Ohio Trouble Shooter.

The generator and starter cannot be readily applied to a Ford car. The expense would be very great and the operation unsatisfactory. We are mailing you a wiring diagram of the 1916 Saxon, also page 47 of the March 20th, 1924, issue of MOTOR AGE, which gives internal circuits of the generator and regulator. If the machine does not generate when connected up it is likely that the regulator contacts need cleaning and adjusting. If the regulator does not function properly you might write us again and we will make up a sketch showing method of using a standard 6 volt cutout together with iron wire resistance to take the place of the regulator.

TO GET PURE WATER FOR BATTERIES

Q.—I am planning on constructing a small still for distilling water for storage batteries and would like to know if a steel boiler would be harmful to the water, and if so of what material the boiler should be made? Would also like to know if a copper tube would be all right for condensing the steam, or should a lead tube be used, and if so, where could one be secured?—Joe Becker, Becker Battery and Welding Service, White City, Kans.

When steam forms, it is supposed to leave behind all iron and other minerals which the water may have had. Accordingly, unless the boiler is so full that water actually splashes up into the steam outlet, we do not believe that any iron from the boiler will get into the steam pipe. It might be well to have a deflector or baffle to prevent this. Many steamers are made of copper, but this is probably to give durability, rather than for any other reason. We see no reason why copper tubing would not be all right for the condenser coil.

Trouble With Bill Fixit

EDITED BY A. H. PACKER



Does the Cutout Prevent Over Charging?

This is a story of a garage man, a regular fellow and his friend, the battery man. The question came up as to what the cutout does and an argument followed. We have tried to settle the argument. How would you have done it?

Q.—A local garage man claims that a battery can be over-charged or burned out in a car when the generator is charging 10 or 15 amperes. I argue that the generator cutout takes care of all the excess current when the battery is full. From personal experience as well as business experience I have found that on a long drive, using no lights or starter and the battery having become fully charged by the generator, that the generator automatically stops charging.

When a stop is made, however, and the starter is again used the generator again begins to charge. The garage man claims that the cutout on the generator acts only to keep the motor from running off the generator instead of the battery. What is the action and work of the generator cutout? How does the generator cutout work when the battery becomes fully charged? One-One Battery Service, 1107 Sixteenth street, East Moline, Ill.

The Garage Man Is Right

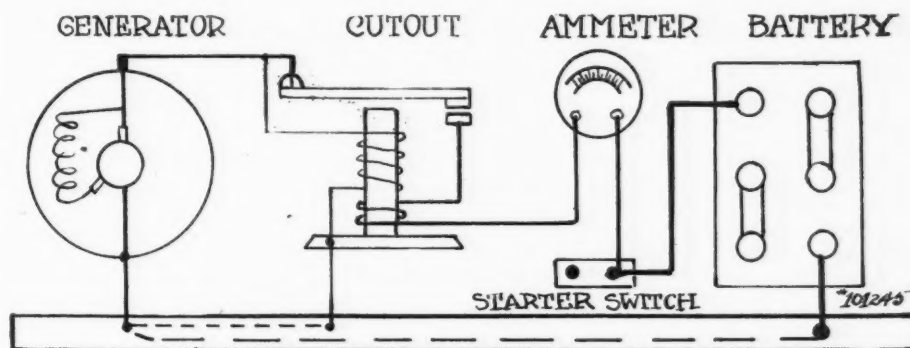
If you are a good scout like all of the MOTOR AGE readers you will buy a good cigar and take it to the local garage man, for he has handed you the correct dope. We do not know of any cars which operate as you describe and where the charging current ceases entirely when the battery has become fully charged due to driving for a long period of time. There are a few cars which have voltage regulators of the vibrating type where the ammeter reading gets gradually less and less as the battery becomes charged. On the average car, however, this is not the case and the charging current is even greater with a fully charged battery than it is with one only partly charged.

We would suggest your making the following experiment. Take the battery from a Ford car and put it on your charging line until it is fully charged and gassing freely and then put it back in the car. Then in order to avoid taking current from the battery crank up the car by hand and see whether the ammeter shows charge or whether it shows no charge. If your theory is correct in all cases the ammeter should not show any charge for the battery does not need any current. You will, find, however, that if the charging system was in good condition before you took the battery out that the ammeter will show a very heavy reading and this current going to a fully charged battery will tend to overheat it and also evaporate the water from the electrolyte. In order to explain the action of the cutout we have shown a sketch which includes a generator, cutout and an ammeter, battery, a starter switch and the side rail of a car, which is known as the ground or return circuit for the current. The action of the

cutout is merely to serve as a switch operated by electricity and magnetism so that the driver of the car does not have to remember and close the switch every time he starts up and open it every time he stops.

If a switch of this kind has to be operated by the driver he might forget and leave the switch on when the car was standing. When a generator is standing still it does not generate any current and is just a mass of wires so that with the generator not rotating and still connected to the battery it would draw current and would run the battery down. Here we see that your friend the garage

gets to the point where it pulls the armature down and the cutout contacts close. We now have two paths for the generator current, one being through the fine winding and the other being through the cutout points and through the heavy winding of the cutout and through the ammeter to the starter switch and then through a heavy cable to battery. We have not shown the rest of the starter circuit. This current then charges the battery and in going through the heavy winding of the cutout assists the shunt winding in holding the points closed. You will also notice that the current is going from left to right through the



Circuits which show how the cutout works

man is correct in his theory and the cutout is used to break the circuit so that the generator does not try to run as a motor when the engine is standing still. To understand this better we will now refer to the diagram.

At the left the generator has an armature and another circuit known as the field which draws current from the armature in order to produce the necessary field magnetism. As the engine speeds up and the generator increases its voltage current will flow over to the right and through the fine winding of the cutout and down to the frame of the car and back to the generator. While the cutout points are open there is no connection either to the ammeter or the battery, although one terminal of the battery is connected to the side rail of the car or ground as we will call it. If you have ever tried winding a coil of wire around a piece of iron and then running current through the coil you know that this makes the iron a magnet.

When this current goes through the fine winding of the cutout it does the same thing to the core of the cutout and as the magnetic strength increases it

ammeter, so that the needle will go to one side of the scale.

Now as the engine slows down the generator will produce less current and less voltage and finally a point will come where the generator is producing so little voltage that the battery actually starts to discharge through it. This will show up on the ammeter where the needle will go to the other side of zero and in the cutout the reverse of current has another effect.

Where the current through the series winding formerly helped the shunt winding hold the points together it now opposes the shunt winding and weakens the magnetism until the spring on the armature causes the contacts to open. This is the way the cutout operates so as to protect the battery and keep it from discharging through the generator when the engine stops. The battery becoming fully charged, however, never will make the cutout points open for the fully charged battery will have a higher voltage than the discharged battery and will make the generator voltage higher which in turn will make the shunt winding stronger and will hold the points even tighter together.



Motor Age's Flat Rate Forum

EDITED BY PAUL DUMAS

Wherein We Check a Flat Rate Estimate

In December, 1924, we overhauled a 1919 Buick six and the customer, when he took the car out of the shop, and after driving it for a few days, stated that the car had more power and pep than when new. Now he is telling everyone that we robbed him. We would like to have you make an estimate of the labor and see how much difference there is in our prices. Below is a list of the labor we performed and the price.

Total Charge Is \$128.84

Regrind cylinders.
Regrind and reface valves.
Turn down armature and overhaul generator.
Adjust and overhaul carbureter.
Align connecting rods.
Repair radiator.
Fill scores in cylinder block.
Overhaul front axle.
Disassemble and reassemble engine, labor on bearings.

Total charge for labor \$69.45, new parts used \$59.39.

Our estimate of the labor performed is as follows:

Rebush axle.....	\$7.20
Regrind cylinders only after removed	15.20
Remove, strip and replace cylinder	15.00

Fit new pistons.....	4.80
Take up main and rod bearings	8.15
Overhaul generator after removed	6.15
Reface and regrind valves.....	2.85
Overhaul carbureter	4.10
Install new rings and align rods	4.35

Total\$67.80

Added to this approximately \$3 for radiator repair and at least \$4 for filling scores, our estimated price would be \$75 for labor.

Hudson-Essex Dealer Wants Duplicate Chicago, Ill.

To the Editor of MOTOR AGE:

I would like to obtain if possible a duplicate copy of your Flat-Rate Chart for passenger cars which you published in your last October issue.—W. E. Turpin, Kelly Motor Co.

Chart Benefits Small Dealers

Fayetteville, Ark.

To the Editor of MOTOR AGE:

The MOTOR AGE Flat-Rate Chart published in the issue of Oct. 23, 1924, impresses me as a very fine thing for many small dealers who are running general

COMPARATIVE REVENUE

If you have been struggling along in the maintenance business while your neighborhood merchant has been prospering, why not do a bit of local investigating. Find out, if you can, the average time required to resole a pair of shoes, deduct from the cobbler's total charge the average cost for the tacks and leather and then note how his revenue based on the time factor compares with yours. Do the same with regards to the retail prices on pressing and repairing clothes, painting houses, repairing watches, etc. Such an investigation might be helpful in explaining your present financial status.

garages and repair shops. I would like to obtain five reprints of the supplement.

This One from United Motors Service Dealer

Houlton, Me.

To the Editor of MOTOR AGE:

Will you kindly rush us ten copies Flat-Rate Chart and Repair Standards Chart for Complete Car Overhaul. Send us the bill and we will remit, or ship them C. O. D.

Flat Rate Is Known in Iowa

Washington, Iowa.

To the Editor of MOTOR AGE:

Can you furnish me about six copies of the MOTOR AGE Flat-Rate Chart published in the issue of Oct. 23, 1924.—W. E. Pearson.

Want Four Copies

Jerome, Arizona

To the Editor of MOTOR AGE:

We have one of your October 23, 1924, supplements on flat rate schedules of various makes of cars.

We would like to have four copies of this Flat Rate Chart and if there is any charge will be glad to pay it.

We have been getting your magazine for several years and consider it a valuable asset to our business.

Yours very truly,

HARRY AMSTER.

Wants Extra Copies

Plano, Illinois.

To the Editor of MOTOR AGE:—Will you kindly send us two or three extra copies of the issue of MOTOR AGE published some time ago containing the flat rate chart? We will appreciate your giving this your prompt attention.

A. B. SMITH,

Plano Garage Company.

MOTOR AGE'S FLAT-RATE FORUM

No. 7

Chevrolet Flat Rates for ENGINE OVERHAULING

Manufacturers'
Official
Designation
No.

Labor
Charge for
Operation

52 MOTOR OVERHAUL. REMOVE MOTOR FROM CHASSIS, completely tear down and build up and install in car. (Includes removing and installation of radiator and other parts necessary).....

ALSO INCLUDES:

Cylinder block. Replacement of.....
Cleaning and adjusting of original bearings, straightening or replacing connecting rods

REPLACING IF NEEDED:

Timing gears

ADD:

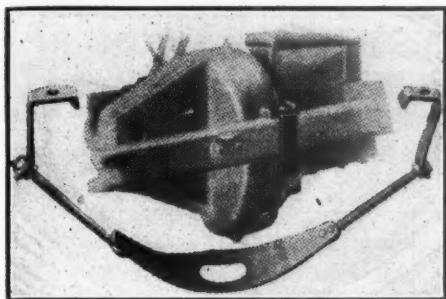
(a) Piston pin, replace one.....	.3
(b) Piston rings, replace three .....	.3
(c) Piston, replace one (not necessary to ream cylinders).....	.3
(d) Connecting rod and bearing assembly, replace, fit and adjust 1 .....	.6
(e) Cylinder, ream and burnish one and fit one oversize piston, ring and pin	1.3
(h) Ream and burnish three main bearings.....	1.5
(Above figures apply to Superior models of Chevrolet car.)	

15.5 hrs.

BOOSTING ACCESSORY SALES

An Engine Support for Fords

The Pioneer Engine Support is for the purpose of giving to Fords the 4-point suspension found in higher priced cars. It is designed to hold the engine in alignment, stiffen the frame and stop vibration; also to prevent crankcase arms from breaking and to repair permanently crankcase arms that are broken.

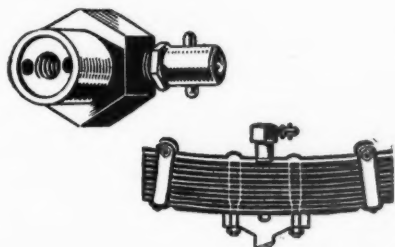


Engine support for Fords

It consists of a pressed steel saddle which fits around flywheel housing, and two bolts and brackets, drop forged, which fit over frame. It is claimed that it can be installed in 20 minutes. The engine support is guaranteed by its manufacturers, The Brewer-Titchener Corp., Cortland, N. Y.

"Lakewood" Spring Leaf Oilers

These oilers are attached to present center bolt to springs—no new bolt being required. They are made in 1-in. hexagon cold rolled steel bar, hand tapped thread and are manufactured for passenger cars in $\frac{1}{8}$ and $\frac{3}{8}$ in. Standard or S. A. E. threads. Special diameters and threads are supplied for commercial trucks. The oilers are packed in individual cartons, each oiler complete with genuine Alemite or Zerk fitting, and proper fibre gasket included. The list or car driver price is \$1.50 per complete oiler. (Plus regular service rate for installing on car.) Garage repairmen are urged by the manufacturer to determine the exact diameter and style of center bolt thread before ordering oilers. The manufacturer also announces that on some models it is not practicable to install these oilers, which information can be obtained by addressing the manufacturers, Lakewood Fabric Belting &



Above: Close-up of Lakewood spring oiler with gasket; below: View showing installation of oiler

Mfg. Co., 1511 W. 117th street, Lakewood, Cleveland, Ohio.

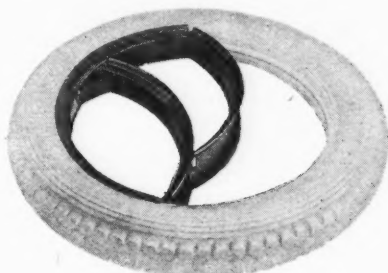
Roffman Collapsible Rim

This product is made in three sections, the idea behind it being to make it possible for anyone quickly to change a tire without the use of tire irons, hammers or other special tools to remove the tire from the rim. The rim is applied by snapping a toggle into place. To remove the rim the toggle is opened and the tire bounced against the ground, whereupon the rim collapses. It is claimed that no extreme exertion is required to place or remove the rim.

Prices are as follows:

30x3½	\$3.80
32x4	4.60
33x4	4.80
34x4	5.00
32x4½	5.50
34x4½	6.00

These prices were effective Jan. 1, 1925. All prices are f. o. b. factory and are

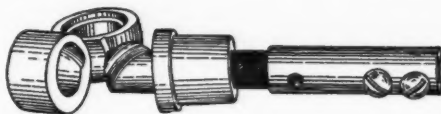


Roffman collapsible rim

subject to change without notice. The manufacturers are Roffman Rim Corp., Williamsport, Pa. (Offices Fisk Bldg., 57th & Broadway, New York City.)

Non-K-Rode Battery Terminal

Non-Corrode Battery Terminal Co., 122 East First street, Geneseo, Ill., have introduced to the trade these terminals, which are for attachment to the positive



Non-K-Rode battery terminal

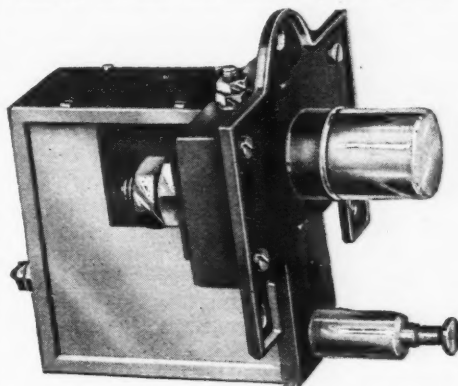
post of the battery. The manufacturer guarantees that they can be put on in ten seconds and released from the battery in the same length of time regardless of time in service.

Packard Port-O-Lite Outfit

On page 29 of the March 26 issue of MOTOR AGE there appeared a description of the Packard Flex-O-Cord and Port-O-Lite outfit, but the name of the manufacturer was omitted. These items are the products of the Packard Electric Co., Warren, Ohio.

"Anti-Stall"

"Anti-Stall" is an automatic attachment for the self-starter, designed to throw the starter into action whenever the motor stalls. It is actuated by magnetic rather than mechanical force. To start the automobile all that is necessary is to turn the ignition key—it is not necessary to use the starter pedal at all.



"Anti-Stall" self-starter attachment

The device is designed for installation on any car that has a Bendix drive.

Prices are as follows:

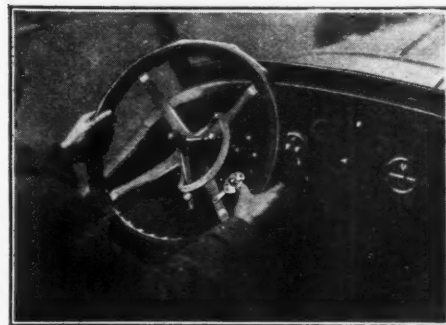
Model No. 10—Black Finish	\$14.75
Model No. 25—De Luxe, all nicked	\$17.75
The manufacturer is Anti-Stall, Inc., 15 W. 44th street, New York City.	

"Hapco" Light Control

This device is designed to afford the driver control of the lights without movement of the hand from the steering wheel. It is made in two models: A—off-side, rear-dim-bright; B—off-dim-bright. The body is of Bakelite with pressed steel cover and attachment arm finished in black enamel.

A slight pressure from the thumb or forefinger operates it. It is also provided with a resistance unit attached back of the dash. The following are the prices: Type A, Black Japan.....\$3.50 Type B, Black Japan..... 3.00 Variable resistance unit..... .50

The above prices include cable and all necessary fittings for installation. Hampton Automobile Products Co., Coal Exchange Bldg., Huntington, W. Va., make it.



Hapco light control

GETTING MORE OUT of the SHOP

Pull-Press All Around Handy Tool

The Pull-Press, as its name implies, is a tool to be used on shop operations requiring a pulling or pressing effort. It is especially useful in such operations as demounting wheels, removing gears, replacing gears, straightening shafts, etc. It literally combines the features of an arbor press, vise, puller and straightener. It can be quickly bolted to any bench with two steel straps and by the removal of a single bolt the Pull-Press may be converted into a horizontal press, wherever any length shafts may be handled.

Two double V-blocks corrugated on one side for vise use and smooth on the reverse side for straightening work are provided. By loosening two bolts the bottom beam may be quickly taken out and the puller hooks used as shown.

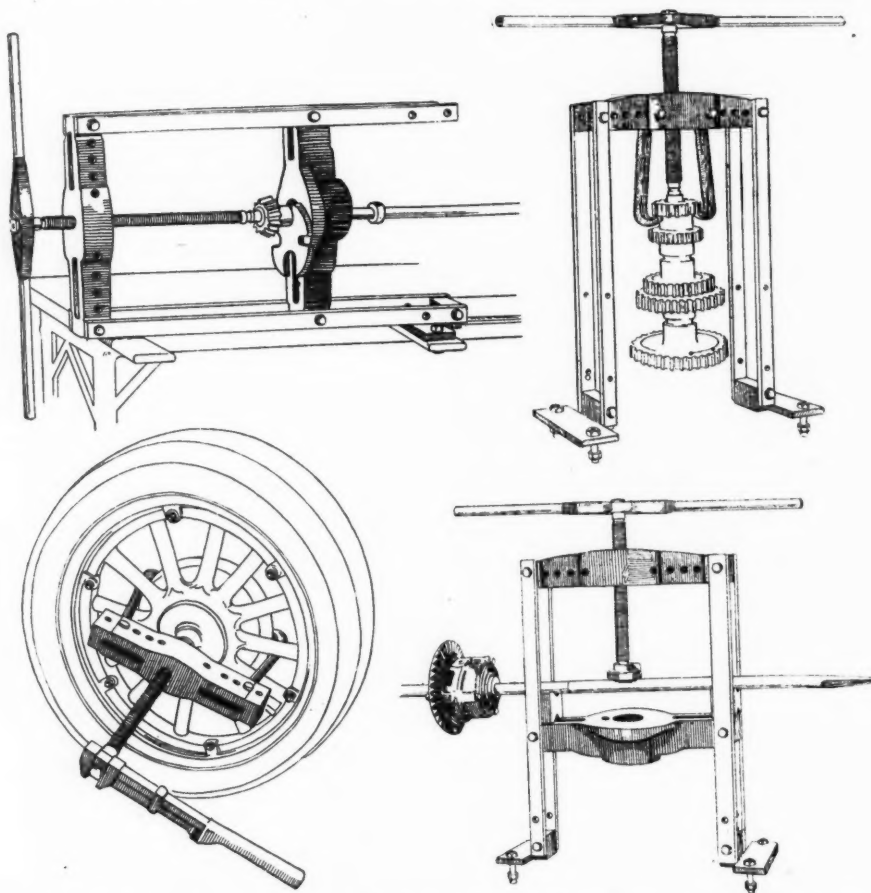
The tool has a capacity of 16,000 lbs.; full vertical capacity, 15½ in.; horizontal distance between links, 12¾ in.; diameter bottom beam hole, 2½ in.; and is provided with an arbor plate with four different sized slots. The price of the Pull-Press complete is \$54 and it is made by The Universal Tool Co., 207 Twentieth street, Huntington, W. Va.

Barker State Industrial Saw

The Barker State saws will handle wood, metal, Bakelite and other compositions. The illustration shows one of the new geared drive saws which the company has added to its present line of belt driven saw. The driving gears are helical cut and operate in oil. Large ball bearings are used in the drive, the power for which is furnished by one-half horse power electric motor. The large cast table will handle 12 in. wide stock and a large hand wheel is provided to raise and lower the table. The latter is 23 by 28



Barker "State Universal" saw



New Pull Press of The Universal Tool Co., Huntington, W. Va. Above—left: By removal of a single bolt it can be converted into a horizontal press—whereby any length shaft can be handled. Right—Transmission gears can be removed. By loosening two bolts the bottom beam can be taken out and the puller hooks used as illustrated. Below—left: The top beam can be removed and used as a puller for removing gears, wheels, collars, sprockets, pulleys, commutators, etc.; right—Two double V-shaped blocks corrugated on one side for vise use and smooth on the reverse side for straightening work are provided with each Pull Press. Blocks hold and clamp shafts against twisting strain and are adjustable to any position

in. and the machine is 34 in. high. The diameter of the saw is 8 in. and the depth of cut 2¾ in.

The Gasoline Automobile

Garage mechanics and students of automobile construction will be interested in the third edition of the *Gasoline Automobile* by Hobbs, Elliott & Consolidator, published by McGraw-Hill Book Company, Inc., 370 Seventh avenue, New York City. This book sells for \$3. The first chapter is a general one on automobile construction while following chapters take up successively engine principles, engine construction, carbureting systems, lubrication and cooling, electricity and magnetism, battery ignition systems, magnetos and magneto ignition, the storage battery, starting and lighting systems, the chassis and running gears, clutches and transmissions, rear axles and differentials, wheels, rims and tires, automobile troubles and remedies and the last chapter deals with the operation and care of motor cars.

DATA ON BRASS PRODUCTS

Data book No. 16 containing prices and weights of sheet brass, brass rod, wire, condenser tubes and seamless brass and copper tubes has been published for free distribution by the Bridgeport Brass Co. of Bridgeport, Conn.

TO MAKE PISTONS AT LA PORTE

INDIANAPOLIS, March 30.—A new automotive factory has been won by La Porte in the founding of the De Luxe Products Corporation, which has become exclusive licensee of the Clark-Turner De Luxe Pistons which were formerly manufactured in Los Angeles by the Clark-Turner Company, whose plant burned down some time ago. Following the fire came the death of Mr. Clark and the company sold its rights and patents to the new De Luxe Products Corporation. The entire shop equipment of the Walker Piston Company of Cleveland has been bought and this is to be moved to La Porte shortly and housed in a plant already leased which will give the new company a fine piston making layout.

EDITORIAL

The Dealer Is an Authority

THERE is one sure way to reach the patient—that is through the doctor. He is the authority in all matters of health.

If he approves, you may interest the patient, but he must set his seal upon the proposition.

There is one sure way to reach the car owner—that is through the dealer. He is the authority on all matters automotive.

Reaching the trade through the trade press is reaching the user through his authority.

Put Your House in Order

AT this season of the year the busy housewife starts in on the annual house-cleaning job. Curtains and pictures come down. Floors are cleared of everything in sight. The painter and decorator gets in his licks. Screens are taken from the basement and given a coat of paint. The lawn mower is sent out to be sharpened and the garden hose put into shape. There is activity. Things are being done to get the house and yard in shape for another season.

Some of our automotive establishments can learn from the busy housewife at this time. Let them, too, be active in the way of cleaning up their places of business and overhauling the machinery for the coming season. If the walls are dirty, whitewash or paint them. Put in the new benches. And how about giving the tow car the once-over? Why not take a notebook and pencil and jot down all the things which ought to be done? Then when the work comes in heavy, the house will be in order to adequately handle it.

Guarantee and Maintenance

ONE REASON why some automotive merchants have made money is because they know the difference between guarantee and maintenance. They know what the customer is entitled to and what he should be charged for. Often because a customer has bought a new car the automotive merchant spoils the customer and himself by a tendency to throw in something for nothing, or to make good something free of charge for which there is every good reason for a legitimate charge.

The clothing merchants who some years ago used to throw in a pair of suspenders or tie with a suit of clothes have ceased that practice. Suspenders and ties are items ordinarily sold over the counter and those who used to get them with a suit of new clothes never thought of asking the merchant to make them a present of these things when not buying a suit. Nor would a person go into an automotive establishment today and ask a salesman for a spark plug or a bottle of polish.

When a tailor makes you a suit of clothes and a week later you find the lining in a sleeve loose he sews it up for nothing, because that is part of his guarantee. Now, if you rip a hole in that sleeve a week later, he sews it up but you pay for the job—that's maintenance.

With motor cars, and especially those just delivered to customers, it is the same thing. Certain jobs may have to be made right free of charge, but the legitimate profits should not get away. We are past the days of the free suspenders and tie.

Advertise Constructively

THERE is a mistaken idea among some merchants, and we are sorry to say it even extends to manufacturers, that the way to advertise their own merchandise is to disparage, belittle, condemn, run down and knock the goods sold or made by the other fellow.

There have been within the last few years some startling examples of the disastrous results that follow the wielding of the hammer by an advertiser. His own business is the one most certain to get cracked.

Destructive advertising has a psychology that reacts upon the advertiser. It creates suspicion and distrust in the public mind and it is only natural that the weakened confidence should apply first of all to the source that created it.

The best way to sell automobiles, accessories or any other article is to talk about their good and useful qualities. Failure to talk about such qualities justifiably gives rise to the presumption that they are lacking. In the automotive trade there is plenty of good merchandise for the dealer to offer his customers—merchandise about which he can become enthusiastic in his praises. And to praise his own merchandise it is not necessary to disparage that of his competitor. Constructive advertising pays, but the other kind is doubly expensive.

Roads Won't Build Themselves

THE warm days of early spring emphasize the imperative necessity of more and wider highways. This is an automotive age and we can't get along with horse and buggy roads.

We have been building highway pavements too narrow. Eighteen feet is not wide enough.

The highway superintendent of Cook County, Illinois, estimates that if all the automobiles in Cook County undertook to use the 346 miles of paved roads in the county at one time, every other car would have to be hoisted to the top of the car ahead and then every mile would be filled.

Of course the condition is closely approximated on a beautiful day in the early spring. When the time comes that automobiles cannot be used with convenience and comfort on the highways the trade will suffer. It is time to stop building 18-foot highways for automobiles.

Dealer Requirements Puzzle Factories

Would Have Trade Sign Up Buyers for Later Deliveries

Makers Say Future Bookings Will Help Credit and Ability to Stock Cars

DETROIT, March 30.—As a means of lessening the anticipated difficulties of meeting dealer requirements in the next several months, factories are urging dealers to greater effort in getting orders from buyers now, even though actual deliveries are not made until May or June. There is frank skepticism on the part of factory sales officials of meeting the second quarter demand on time unless some method of lining up this anticipated volume in advance is found.

The fact that dealers have few cars on hand to meet this expected volume of business is not laid by factories so much to lack of dealer desire to take cars and store them as to the disinclination of banks to provide financing for cars not required for the immediate market. This is a condition which is fairly general throughout the country, factories report, and is considered the principal reason why no general preparation is being made for second quarter sales.

Credit Assistance

To cover this situation the suggestion is advanced by sales executives that dealers make a special effort to line up actual orders for deliveries in the months of April, May and June so that they may present these to their banks in seeking additional credit accommodations. With this business practically assured by the orders it is regarded as certain that many dealers will be enabled to finance car shipments now that otherwise are being held back.

The thought of the factory executives in seeking this business now is prompted by their belief that it will be impossible to handle the second quarter volume if it is all launched at the one time. Although most factories are operating now at a high speed, there is considerable capacity not yet called upon. Full capacity, if it could be realized within a few days or weeks, would not be sufficient to

Kites for Kids Aid Sales Promotion

CINCINNATI, O., March 30.—The Herschede Motor Car Co., 1044 Gilbert avenue, celebrated the windy month of March by giving some 20,000 kites to the kiddies, thus converting them into loyal and enthusiastic advertisers and boosters.

The kites were made in several attractive colors and announced that the Flint Flyer "Tops Them All."

meet the concentrated quarter buying, executives point out.

Even starting now to store cars is regarded as too late to handle the full volume of business that will be forthcoming, but delays in deliveries will be reduced by at least a certain percentage and factories will be enabled to get organized just that much ahead on increased schedule. Any organization toward capacity now will make the factory position that much easier when the real heavy movement comes.

It is not being argued by factories that there will be a shortage of all makes of new cars by May 1, or of all models. The factory position is that certain models in all lines will probably be far behind demand, making it necessary for buyers to wait at least several weeks for deliveries, take another model in the same line, or get an immediate delivery in another make of car.

Strenuous efforts are being made by factory branches to move cars on this basis at the present time and every effort is being made to get dealers generally lined up in this activity. Buyers are being told by retail branch salesmen that the only way to avoid delays in deliveries is by taking their cars now.

PLANS \$70,000 TIRE HOME

MIAMI, Fla., March 30.—N. O. Penny, 14 N. E. First St., Miami, president of the Miami Tire Co., has announced plans for the construction of a modern tire distributing plant at a cost of about \$70,000, to be one of the largest tire dealer establishments in the Southeast.

Ford Payroll in 1924 Over Quarter Billion

DETROIT, Mich., March 28.—More than a quarter of a billion dollars in wages and salaries were paid to the employees of the Ford Motor Co. during 1924, according to payroll totals made public here.

The largest payrolls were at the Highland Park and River Rouge plants here, the total for these two plants alone reaching \$172,820,145.

At other plants and branches throughout the country the company during the last year paid employees a total of \$72,532,476. The figures given out also include wages and salaries paid at the Lincoln Motor Co., the C. E. Johansson Co., Inc., and the Fordson Coal Co., which totaled \$8,648,906, bringing the grand total for the organization up to \$253,001,528.

N. A. C. C. Leaders Hear Plans for N.A.D.A. Meeting Program

Session of Maker Association's Directorate to Determine Action of This Organization

DETROIT, March 28.—Committees of the National Automobile Chamber of Commerce and of the National Automobile Dealers Association met at the Detroit Athletic Club this week to discuss the program of dealer meetings which the dealer association is initiating. Determination of N. A. C. C. procedure will be made at the directors' meeting scheduled for New York next week at which a full report of the Detroit committee conference will be received.

The N. A. C. C. committee was headed by President P. J. Haynes, of Dodge Brothers, and C. E. Gambill, president of the N. A. D. A., was chairman of his committee. General Managers Alfred Reeves and C. A. Vane of the two associations participated in the conference. It was stated following the meeting that the proposals of the dealer association had been received with deep interest by the manufacturers' committee and that the directors' action would indicate desire to help in dealer welfare work.

Sentiment at the meeting indicated that the two associations have been drawn much closer together by the successful dealer work during the past year, and that a much closer understanding has been established of how the two associations can participate in continued activity.

Output for U.S. and Canada in February Reached 287,019

WASHINGTON, March 28.—February production of motor vehicles in the United States and Canada, according to the Department of Commerce, totaled 252,785 passenger cars and 34,234 trucks. The February, 1924, total was 343,444 passenger cars and 32,805 trucks, while January of this year showed 212,909 passenger cars and 28,041 trucks.

Figures for the United States alone gave 242,006 passenger cars and 32,566 trucks for February as against 204,608 passenger cars and 26,501 trucks for the preceding month.

H. P. FEDERSPIEL DEAD

DETROIT, March 28.—H. P. Federspiel, assistant sales manager Hudson Motor Car Co., died recently in Los Angeles. Mr. Federspiel, a native of St. Louis, had been a member of the Hudson factory organization for several years past, making his home in Detroit. The funeral was held in St. Louis.

Pruning of Book Values Seen in Loss by Peerless for 1924

Company's President Says Management Believes Profit Can Be Returned This Year

CLEVELAND, March 28.—The annual report of the Peerless Motor Car Co., sets forth a loss of \$1,694,178 to the surplus account of 1924, but at the same time it paints a much brighter future for the company during 1925.

The loss recorded is largely an account of the slashing of book values. Here is seen the hand of the new president, Edward Ver Linden, who is getting down to rock bottom and squaring away for better business on a sounder foundation.

Of the loss \$934,000 is due to a deficit in operations; and \$759,767 is due to charge-offs such as \$181,866 on tools, jigs, etc., and deferred engineering and experimental work; \$202,399 on used cars; \$149,360 for service cars and truck parts on hand; \$133,234 reserve against inventory value of open bodies received during the year.

Heavy Sales in March

The sales for 1924 totaled about 4,000 cars, the sales aggregating \$15,491,596. During the first twenty days of March the sales exceeded the combined business of January and February of last year.

President Ver Linden says: "From past experience the management believes that, by intelligent economies in manufacture, by substantial savings in the purchase of material, by increased energy in sales effort and by the maintenance of a strong factory organization, a profit can be returned to the company in 1925 even if the number of units produced and sold does not exceed the number of cars produced and sold in 1924."

Flint Adds Sedan to Its B-40 Series Priced at \$1580

FLINT, Mich., March 30.—Flint Motor Co. now is in production of its new Series B-40 models and has added a sedan to this line priced at \$1,580. The price on the improved touring car is \$1,285, and the brougham, completing the line, is priced at \$1,620. Lockheed hydraulic four wheel brakes are standard equipment on the new models.

Body lines of the new touring follow closely the lines of the Flint "55," and is five and a half inches lower than the former touring model. The engine in the new line is hung in a cradle similar to the mounting in the "55." Several minor changes also have been made in the engine. The gasoline tank capacity has been increased.

The new sedan is a four door model, upholstered in wool cloth and is equipped with built-in vanity case and smoking set. It has a heater, robe rail and foot

Automotive Manufacturers Star "Freckles" Barry in Film Boosting Trade-at-Home Movement



Chicago, March 30.—Four automotive concerns are among the sponsors of a motion picture "My Home Town," starring Wesley (Freckles) Barry, which was recently produced here by the Atlas Educational Film Company, Oak Park.

The purpose of this motion picture is to boost the "Trade-At-Home" movement for the benefit of local dealers. The automotive concerns participating are the Hupp Motor Car Corp., Willard Storage Battery Co., Champion Spark Plug Co., and The Bassick Manufacturing Co. The film tells of the rejuvenating of a town that has gone asleep because the people had lost interest and were spending their money elsewhere. In the course of rejuvenation there is a building boom, and a new interest on the part of the people to make their homes more attractive, while they find that they can purchase what they want right in their own home town.

rest and one-piece windshield. The brougham model numbers several changes including a larger trunk rack. Touring and sedan are finished in blue Duco and the brougham in varnish. All models carry front bumpers and spare tires.

MOON ON RECORD SCHEDULE

ST. LOUIS, March 30.—The March production schedule of the Moon Motor Car Company is the heaviest in its 18 years' history, according to Stewart McDonald, president. The company is producing cars at the rate 1,500 a month and its production schedule for the first six months call for 8,000 cars—a gain of about 62 per cent in production over the same period of the previous year.

About 75 per cent of Moon production at the present time is on enclosed models.

SHIPPING IMPROVED CHASSIS

DETROIT, March 28.—Chevrolet Motor Co. is now shipping its improved commercial vehicle chassis, the prices on which are now listed as \$425 for the half-ton capacity model, and \$550 for the one-ton. Sales of commercial models by Chevrolet last year approximated 24,000. Under sales development plans which the company has outlined for the year it is expected to double this volume.

Nash Produces New Four Door Sedan On Special Six Chassis

KENOSHA, Wis., March 28.—Nash Motors Company has announced a new four-door sedan on the Nash Special Six chassis. It will sell at \$1,545 f. o. b. factory. The body is low, doors are wide and seats deep, the upholstery and trim being in dark blue mohair velvet. Arm rests are provided in the rear compartment.

The silver finished hardware, including door handles, window lifts and dome light are supplemented by a vanity case and smoking set, other equipment including heater, silken window curtains, windshield wiper and rear-vision mirror. Four wheel brakes, full balloon tires and five disc wheels are standard equipment.

"The Special Six four-door sedan was designed and built for that large field of buyers who appreciate and prefer everything in the way of appearance and luxury found usually in cars of higher price and larger size," said E. H. McCarthy, general sales manager of the Nash company.

WITT LEAVES FLINT

FLINT, Mich., March 28.—Frank E. Witt has resigned as general sales manager of the Flint Motor Co. His plans for the future have not been announced.

Ford Plan Carries Guarantee on Used Cars Sold by Trade

Arrangement Insures Proper Mechanical Operation Under Ordinary Driving Conditions

DETROIT, March 30.—One of the most important steps yet undertaken to protect used car purchasers and at the same time place the handling of such cars on a more businesslike basis is an announcement by Edsel B. Ford, president of the Ford Motor Company, that operating under a company plan Ford dealers will hereafter place a guarantee upon used Ford cars disposed of by them.

Inasmuch as there are about as many Fords in operation in the country as all other makes combined, it is apparent that the action of the Ford Motor Company will exert a wide influence on the marketing of used cars and in improving conditions generally in that phase of the automobile business.

"Every used Ford car represents so much unused transportation and is of value to someone," Mr. Ford said in his statement regarding the plan. "The Ford dealer through his position and intimate knowledge of the car certainly is the best judge as to the value of this transportation—the best to determine a price on the mileage the car may yet be expected to deliver—that's his business.

Prepared for Reconditioning

"With this advantage the Ford dealer is prepared to give his used car customers benefits not likely to be obtained elsewhere.

"If reconditioning is necessary he has the work done by trained Ford mechanics

using improved equipment and genuine Ford parts, and with these economies and advantages he is able to offer the used car to the purchaser at low cost and with a guarantee covering its mechanical fitness."

The plan becomes effective at once and places a guarantee on used Ford cars purchased from authorized Ford dealers thereby insuring proper mechanical operation under ordinary driving conditions.

In assuming the direction and supervision of this plan to be carried out by its dealer organization, the Ford Motor Company feels that it is embracing an opportunity to be of greater service to those who purchase used Ford cars.

Vellie Names Hadden Sales Chief Succeeding Bradfield

MOLINE, Ill., March 28.—Vellie Motors Corporation, Moline, Ill., has announced appointment of C. W. Hadden as general sales manager, succeeding F. E. Bradfield, vice president and general sales manager, resigned.

Mr. Hadden for several years was connected with the Minneapolis Steel & Machinery Company and actively engaged in distribution of farm implements and tractors. In 1922 he joined the Maxwell Motor Corporation as assistant to the president, later becoming identified with the Maxwell Chrysler sales division.

With Vellie he will have entire charge of the sales organization, both domestic and foreign.

Resignation of Henry Lord as secretary and director of sales for the Vellie Company also is announced.

Neither Mr. Bradfield nor Mr. Lord have made known their future plans.

Car Schedules Running at 90 Per Cent of Capacity

Preliminary Estimates Put Production for March Fifth Greater Than February's.

NEW YORK, March 30.—The opening of the spring season in automobile sales finds production schedules at the factories running over 90 per cent of capacity. In a few plants night shifts have been put on to meet the demand from distributors and dealers, while in others output has not yet reached its peak.

Preliminary estimates of March production are to the effect that the total will be at least 20 per cent greater than in February.

A survey of 25 key cities shows that fine weather in most sections has stimulated buying, and that sales are running slightly over the figures for the corresponding period a year ago. Despite the favorable outlook, dealers' stocks are abnormally low, and manufacturers, feeling that the pendulum has swung too far back from the overstocked condition that was faced last year, are urging larger orders in anticipation of the peak demand later on. Some of the distributors, it is known, are temporarily embarrassed by large stocks of cars that dealers have declined to take off their hands, but this situation is not regarded as serious and is already in process of being cleared up.

Truck production is steadily expanding, and the outlook is that 1925 will be as good a year as commercial car manufacturers have yet seen.

Price Revision Announced By Stutz Motor Car Company

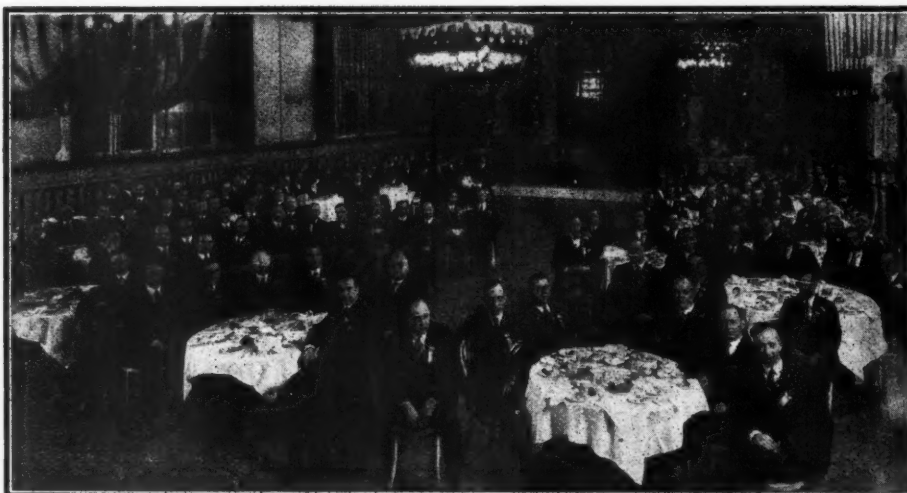
INDIANAPOLIS, March 28.—A revised price list, effective March 16th, has been announced by the Stutz Motor Car Company as follows:

Series.	Type.	List Price.
No. 6-94	Chassis	\$2,195.00
No. 6-95	Chassis	2,735.00
No. 6-94	5-Pas. Phaeton	2,395.00
No. 6-94	2-3-Pas. Roadster	2,395.00
No. 6-94	5-Pas. Sedan	3,050.00
No. 6-94	4-Pas. Coupe	3,050.00
No. 6-95	5-Pas. Sportster	3,035.00
No. 6-95	7-Pas. Tourster	3,070.00
No. 6-95	5-Pas. Sportbrohm	3,785.00
No. 6-95	7-Pas. Suburban	3,935.00
No. 6-95	7-Pas. Berline	4,035.00

DERRICKSON HAS OPERATION

ST. LOUIS, March 30.—Charles L. Derrickson, vice-president of McQuay-Norris Mfg. Co., was successfully operated upon for appendicitis in St. Luke's Hospital on March 25. His physicians report that he is making an excellent recovery from the operation. Mr. Derrickson has been in poor health for a number of months but his medical advisors expect that this surgical operation will clear up the source of his troubles.

Refreshed With Sales Enthusiasm



When the distributors of Gabriel Snubbers held their third annual convention in Chicago recently they first dined well and then submitted to the photographer's aim. Sales plans for 1925 were formulated.

G. M. Financial Condition Is Best in History, Report Shows

Earnings in 1924 Lower Than 1923 But Statement Indicates Very Healthful Status

NEW YORK, March 28.—Net income of \$45,330,887 after depreciation, federal taxes and other charges is shown in the report of the General Motors Corporation for the year ended December 31, 1924, against \$62,087,525 in 1923. The earnings, after debenture and preferred dividends are equal to \$7.37 a share on the 5,161,599 shares of common stock of no par value, as compared with \$10.69 in 1923.

The balance left after the debenture and preferred payments was \$38,058,250, representing only such proportion of the profits of the Fisher Body Corporation and the General Motors Acceptance Corporation as was received in the form of cash dividends. The corporation's share in the undistributed earnings of these two companies was \$6,292,603, which, added the balance shown above, represents a total of \$51,623,490. Surplus after common dividends was \$13,058,250, as compared with \$30,408,128 a year ago, and profit and loss surplus \$82,110,929, against \$120,699,300.

No Fixed Indebtedness

The statement reveals the corporation as in the best financial condition in its history. All purchase money mortgages have been paid, so that at the end of the year there were no notes payable or fixed indebtedness of any kind. Cash in banks at the close of the year was \$88,059,016; sight drafts, \$4,217,684; inventories, \$97,201,686; total current assets \$208,179,254. Current liabilities amounted to \$47,075,073, leaving an excess of current assets over current liabilities of \$161,105,281. This compares with \$140,740,764 as of December 31, 1923, an increase of \$20,364,517.

Reserves for depreciation of real estate, plant and equipment show a net increase of \$13,652,223 for the year. The total amount spent on account of additions and improvements to real estate, plant and equipment was \$12,364,393. "As our plants are now well rounded out and amply capable of meeting the estimated sales demand likely to be made upon them," says the report, "there is every reason to believe that the increase in this investment during the coming year will be relatively small, as it was during 1924."

G. M. SALES BY MAKES

NEW YORK, March 28.—The General Motors Corp. reports 1924 sales to dealers by makes of cars as compared with 1923 sales as follows:

Passenger Cars.	1924.	1923.
Buick	166,952	218,286
Cadillac	17,905	22,201
Chevrolet	295,456	464,800
Oakland	36,512	35,974
Oldsmobile	45,728	33,356
Commercial Cars.		
Chevrolet	19,277	15,328
GMC Trucks	5,508	6,968

Days of Immense Annual Production Increases Are Gone, Say G. M. Executives.

Chairman of Board and President in Report to Stockholders Expect "Reasonable Gain" in Output This Year.

NEW YORK, March 28.—The days of immense annual increase in automobile production and sale are definitely past, and the industry has now reached a point where only the strongly organized and capably managed corporations can expect to grow, it is declared by Pierre S. du Pont, chairman of the board, and Alfred P. Sloan, Jr., president, in their message to stockholders of General Motors Corp., issued with the annual report for 1924.

A "reasonable gain" in production this year over last is predicted, and a permanently satisfactory annual business is looked for from three sources, which are described as follows:

2,000,000 Replacement Units

"First, from replacements. If the average lifetime of a car is six years, 2,000,000 cars must be manufactured this year to take the place of those that have rendered their service and passed on.

"Second, from the normal development of the country. Population is increasing even with the present restriction on immigration at a rate between 1 and 2 per cent a year. This, however, is not a true measure of possible growth, for wealth as well as numbers is a factor. Increase in annual income in the last ten years has been about 100 per cent. The industry should have its proper share of annual growth from the increase in national purchasing power.

"Third, from exports. In 1923 the exports of cars and trucks amounted to \$139,800,000; in 1924 to \$158,200,000. Foreign demand has become an important factor in the industry's business and that demand will rapidly increase as good roads are developed and the economic value of the motor car is more fully recognized.

Policy on Dealer Stocks

"Referring to the current sales and production policy of the corporation, the message says:

"During 1924 the corporation adopted a production policy as affecting stocks of finished cars which its dealers and distributors will be expected to carry. This policy is predicated upon the sale of cars to consumer as a fundamental index. Such sales are subject to seasonal fluctuations. The merchandising policy of the corporation requires that dealers and distributors shall accumulate stocks dur-

ing seasons of relatively low retail deliveries in order to facilitate prompt deliveries in seasonal periods of heavy retail demand as well as to maintain manufacturing and distributing economies afforded by a reasonably level rate of production. The amount of such stock varies with the seasons of the year and is based upon a careful analysis of the trend of retail demand. No dealer is required or permitted to carry stocks beyond that point.

"It is believed that the corporation in the future will be free from the evils resulting from excess accumulation of stocks involving unnecessary storage, interest and carrying charges as well as drastic curtailment of production schedules such as have occurred at times in the past.

Field Sales Exceed Corporation's

"In accordance with the above established policy sales by dealers and distributors to consumers during the year 1924 were about 70,000 cars greater than the corporation's sales to dealers and distributors. Stocks of finished cars on hand at the close of 1924 were sub-normal due to the situation in the Chevrolet division, which reduced stocks to a minimum preparatory to the introduction of the new Chevrolet on January 1, 1925. Had the production policy of 1923 been in effect in 1924 the corporation's sales would have been about 70,000 cars greater with substantial increases in net profit for that year.

"It has been, and undoubtedly will continue to be the policy of the industry to share the economies flowing from increased production with the purchaser through either lowered sales prices or betterment in quality, or both. At times such economies have been anticipated and sales prices established that could only be justified by greatly increased volume. The time has come, however, when any great increase of volume must be gained not from additional reservoirs of new buyers or new markets unworked by other manufacturers, but on the contrary, from well-exploited markets intensely cultivated by all manufacturers. Under such circumstances, price reductions in the future face entirely different conditions from those which have prevailed in the past."

Oldsmobile	1,497
Totals.	
Passenger Cars.....	562,553
Commercial Cars.....	24,785
Miscellaneous	147
(Includes tractors and cars and trucks not now manufactured.)	
Grand total	587,341

SERVICE MANAGERS TO MEET

NEW YORK, March 28.—A meeting of service managers of the Automotive Electric Service Association will be held April 8 in Cleveland at the Hollenden Hotel. Problems of automotive electric servicing will be informally discussed.

Increased Activity Found at Cleveland's Car Plants

Aggressive Policy of Local Association Reduces Used Vehicle Stocks to Low Level

CLEVELAND, March 28.—The automobile industry in the Cleveland district lately has been showing increased activity. Factories have increased payrolls and are producing more cars than at any other period in the year.

Distributors report dealers are making more sales of used cars, while in Cleveland stocks of used cars are reported lower than they were a year ago. The aggressive merchandising policy of the Cleveland Automobile Manufacturers and Dealers Association is given a large share of credit for the condition of used car stocks.

Sales at the Jordan plant during March equaled those of the peak period last April. Sales of the new line eight are running ahead of the six cylinder models. March output at this plant will total about 800. The first half of the year 1925 will run well ahead of the first half of the previous year, according to present indications. The company will produce about 1,500 cars the present quarter. That figure is considerably greater than that of the first quarter of 1924.

Chandler Ahead of Last Year

Chandler has broken away from the seasonal dullness of January and February, and is running well ahead of last year. Sales in March are better than they were in the same month last year, and that is true for January and February. The roadster on sport lines built by this company has gained in popularity this year, but 85 per cent of the factory output is closed body type. Export business has shown an improvement over last year.

Stearns-Knight production during March increased to keep up with expansion in sales. The volume of production during the first quarter is considerably greater than it was in the corresponding period a year ago.

Rollin plants have taken on more men recently and distributors are sending in orders at a faster rate than they were a year ago.

At the Peerless plant, an optimistic tone prevails. The recent reductions in prices that have been made in the administration of the new president, Edward Ver Linden, have helped sales materially.

Both eight and six cylinder models are selling better than a year ago. Production at this plant in the first quarter is well ahead of that of a year ago in the same three months.

Cleveland's new light six is said to have made quite an impression on the market. Orders for these cars have sent factory production up far ahead of the last year's record for the first quarter. Sales of the larger models have increased this year over last year also.

Defies Traffic Cop She Is Fined

HARTFORD, Conn., March 30.—Pleading guilty to a charge of violation of the pedestrian traffic law, a Hartford woman was fined \$10 and costs by Judge Creedon in the local police court. Recently the woman was crossing Main street. The traffic sign was set against pedestrian traffic and when she was ordered back to the sidewalk she abused the traffic policeman, incidentally kicking up quite a scene and scratching the face of the officer. She refused to go to the police station voluntarily and had to be taken there in the patrol.

Accessory Trade Picks Up in Dixie Following Decline

ATLANTA, Ga., March 30.—Some of the larger distributors of accessories in Atlanta advise that their sales volume the latter half of February experienced a marked decline in nearly every section of the southeastern territory, the last two weeks of the month proving one of the worst in total sales volume in accessories of any two weeks' period in almost half a year.

It is encouraging to note, however, that these same jobbers report sales to have experienced a pickup the early part of March, and then to have continued to climb through the rest of the month so that March volume will prove entirely satisfactory, almost fully equal to the excellent business enjoyed during January.

DISTRIBUTE WESTCOTT

SPRINGFIELD, Mass., March 28.—Westcott Motors of New England, Inc., has been formed for the distribution of the Westcott car, with headquarters here. Samuel Green is president and Herman Green treasurer of the new concern.

N.A.C.C. Will Hold Meetings Abroad to Stimulate Trade

Seek Expansion of U. S. Exports to at Least Fourth of Domestic Business

NEW YORK, March 28.—Plans are in full swing for the series of meetings to be conducted in Europe next summer by representatives of the National Automobile Chamber of Commerce with the view to preparing the way for an expansion of American foreign trade in automobiles. Itineraries have been mapped out, dates are being arranged, and the materials to be used by the speakers is being prepared.

Roy D. Chapin, chairman of the Highways Committee of the chamber, is already in Europe making a survey of the situation and otherwise laying the groundwork. George F. Bauer, secretary of the Foreign Trade Committee, will follow late in April and conclude arrangements for the meetings. John N. Willys, chairman of the Foreign Trade Committee, will leave in June to begin the meetings.

Would Remove Expansion Bars

The movement thus inaugurated will be the first concerted effort of American automobile manufacturers to consolidate the gains already made in foreign trade and to remove the obstacles that have long been recognized as bars to expansion in this direction. The ultimate goal is a total of foreign business at least 25 per cent of the total domestic business. The proportion is now about 12 per cent.

The automotive problems in foreign countries will be dealt with in a fundamental way by the American representatives. The point will be stressed that American manufacturers have no desire to monopolize the market abroad, but rather to participate in a general expansion of the business, in which the domestic industries in the countries overseas would receive their proper share.

Particular attention will be given to the legislative bars to the free use of automobiles. The viewpoint persists in many countries that the automobile is a luxury rather than a utility, and this is reflected in the taxes and other restrictions to which automobile owners are subject.

WILL SELL FLINTS

FLINT, Mich., March 30.—The Flint Motor Co. announces the following dealer appointments:

Lawrence Motor Co., Wooster, O.; Handlosser Sales and Service Co., Detroit; A. Kann and Company, Manistee, Mich.; Roy Montgomery, Greensburg, Ind.; Ft. Wayne Flint Co., Ft. Wayne, Ind.; B. and H. Garage, Barnhardt, Mo.; Star Garage, Lenexa, Kans.; I. R. Jones, Iola, Kans.; Ora Houlton, Abilene, Kans.; West End Garage, Kulpont, Pa.; Murphy Motor Car Co., Middletown, O.; Fred S. Lufkin, Gloucester, Mass.; West End Garage, Marlboro, Mass.; Kirk Motor Co., Norfolk, W. Va.; Mr. John Ebling, Schuylkill Haven, Pa.; Mr. Harry Smith, Pinegrove, Pa.; Mr. A. H. Snyder, Tamaqua, Pa.

Legislatures Receive 1600 Automotive Measures in First Two Months

WASHINGTON, March 30.—In the first two months of 1925 over 1,600 bills relating to the automotive industry were introduced in the various state legislatures, it is reported by the Bus Division of the American Automobile Association.

Many are very drastic and if enacted would restrict the use of motor vehicles.

Some are constructive and should be passed, the Bus Division says, but the majority were drawn up without proper investigation for the need of such laws.

More attention to the enforcement of existing laws is urged.

Canadian Registration Statistics

The table to the right shows 1924 motor vehicle registrations of Canada by provinces. The figures were obtained by the Automotive Industries of Canada from registration officials and comprise what is considered an authentic tabulation.

Province.	Passenger Cars.	Commercial.	Motor-cycles.	Total.
Ontario	271,341	31,488	3,941	306,770
Quebec	69,747	11,236	1,999	82,982
Saskatchewan	65,928	3,780	187	69,895
British Columbia	42,950	8,550	825	52,325
Alberta	45,871	2,053	331	48,255
Manitoba	40,763	2,655	597	44,015
Nova Scotia	18,234	2,235	141	20,610
New Brunswick	18,311	1,401	82	19,794
Prince Edward Island	2,471	100	6	2,577
	575,616	63,498	8,109	647,223

Canadian Car and Truck Registration by Provinces for 21 Years

Year.	Ontario.	Quebec.	Sask.	B. C.	Alberta.	Manitoba.	N. S.	N. B.	P. E. I.	Total.	Gain.
1924	302,829	80,983	69,708	51,500	47,924	43,418	20,469	19,712	2,571	639,114	72,628
1923	274,427	68,959	63,017	39,500	41,933	41,515	18,103	16,602	2,430	566,486	67,464
1922	234,947	58,667	58,836	34,500	39,964	41,015	15,884	13,513	2,146	499,022	43,358
1921	201,532	52,951	60,836	32,000	39,852	39,240	14,050	13,460	1,743	455,664	52,735
1920	172,065	43,450	60,325	28,136	37,515	36,455	13,456	11,101	1,426	402,629	70,042
1919	139,288	32,637	56,402	21,500	34,862	29,277	10,301	8,306	974	332,887	63,160
1918	109,374	28,338	47,239	15,828	29,500	24,389	8,103	6,475	481	269,727	70,988
1917	83,790	21,702	32,500	11,386	20,800	17,333	5,678	5,249	301	198,739	78,421
1916	54,375	15,347	15,600	8,576	9,703	11,953	1,728	2,986	50	120,318	32,645
1915	42,346	10,112	10,225	7,440	5,832	8,812	971	1,900	35	87,673	20,253
1914	31,724	7,413	8,027	6,688	4,728	7,001	544	1,260	30	67,415	16,926
1913	23,700	5,452	4,659	6,138	3,773	5,406	511	824	26	50,489	15,700
1912	16,266	3,535	2,268	4,289	2,505	4,770	456	700	.....	34,789	13,107
1911	11,339	1,878	1,304	2,220	1,631	2,599	228	483	.....	21,682	12,745
1910	4,200	786	531	1,026	423	1,524	148	299	.....	8,937	4,226
1909	2,400	485	149	504	275	662	69	167	.....	4,711	1,610
1908	1,700	296	36	263	45	412	45	104	.....	2,901	801
1907	1,500	254	54	175	55	.....	02	.....	.....	2,100	883
1906	1,176	.....	.....	175	55	.....	.....	.....	.....	1,217	604
1905	553	.....	.....	.....	41	.....	.....	.....	.....	553	18
1904	535	.....	.....	.....	.....	.....	.....	.....	.....	535	315
1903	220	.....	.....	.....	.....	.....	.....	.....	.....	220	.....

Gilmer Company Offering New Closed Car Upholstery Fabric

PHILADELPHIA, Pa., March 28.—A new upholstery material for closed cars, woven of the finest cotton yarns, is being placed on the market by the L. H. Gilmer Company, well known manufacturers of fan belts and other woven products. The purpose of the Gilmer Company in manufacturing this material was not to produce something cheap, but to make available to the automotive industry a good appearing upholstery having the wearing qualities of cotton.

This new fabric is described by the manufacturer as one having attractive appearance and feel, susceptible to attractive designs, colors and shades, which will seam and tuft well, hold its appearance, not shine and will not pull when clothing slides over it. It is also claimed that it will not soil readily or hold dust, and that it is easily brushed and cleaned. Very good results are said to be had from the use of cotton throughout rather than a mixture of wool and cotton, as is sometimes used.

JAMES FORTESQUE KILLED

BOSTON, March 30.—James Fortesque, for more than 20 years identified with motor activities in this city, was killed by a street car. In the early days of the

Bay State Automobile Association he was one of its active officers and was for some years secretary of the Massachusetts Automobile Association. He was the founder of the Metropolitan Automobile Club. As representative of the American Automobile Association he founded many of the motor clubs of New England.

GIVEN STABILATOR FRANCHISE

PHILADELPHIA, March 30.—The John Warren Watson Co., manufacturers of Watson stabilators, announces appointment of Johnston Brothers, Comp-ton avenue and Washington boulevard, St. Louis, as distributors for the St. Louis district. Stabilator distribution will be handled by a company to be known as the Watson Stabilator Co., of St. Louis, which the franchise holders are forming. The Watson company also has established stabilator service in Miami, Fla., with the Miami Brake Lining Service Station, 209 N. E. Thirteenth street.

NAMED BRANCH EXECUTIVE

ATLANTA, Ga., March 30.—The Atlanta branch of the Ford Motor Co. announces the recent appointment of James H. Wood, Jr., as assistant manager of the branch. He has been identified with the Atlanta branch for a number of years.

Chevrolet's April Program Calls for 2000 Daily Output

DETROIT, March 30.—Chevrolet Motor Co. has set an April schedule of 52,000 cars, or approximately 2,000 daily. This represents an increase of 7,000 over the schedule for March and is approximately capacity output. Employment at all plants is now at practically peak levels.

Chevrolet will make Minneapolis its permanent northwestern headquarters and will erect a \$100,000 building in which will be located the display rooms, offices, parts departments and warehousing space. Territory included in the jurisdiction of the branch will be Minnesota, the Dakotas, Montana, northern Iowa and western Wisconsin. The new headquarters will be ready for occupancy about July 1.

EARNINGS BY MOON

NEW YORK, March 30.—The Moon Motor Car Co. in its statement for 1924 reports net profits of \$559,585 after all charges. Net sales were \$9,287,670. Profits were \$3.11 a share on the common stock as compared with \$4.65 a share in 1923, when net profits totaled \$842,008 with net sales \$9,741,867. Net current assets at the end of the year were \$1,864,522 with current liabilities \$350,962.

Flat Rate Club Maintenance Plan Yields Fort Worth Company Highly Pleasing Results

FORT WORTH, March 23.—The flat-rate club plan for keeping up automobiles and trucks has passed from the experimental stage to a proven success, according to Newby Brothers of this city, who have been specializing in the flat-rate-club plan for three years and who now operate one of the largest repair and service stations in Texas.

The Newby Brothers flat-rate club plan is simple. For \$6 a month the company will keep a car in good running order, tighten and adjust all parts, replace worn out or broken parts, including accident repairs, inspect and grease the car each week and give the club customer the benefit of trouble car service day and night.

The company maintains a pull-in service and if a member's car is disabled in the city limits it will be towed in free. If it is disabled on the road it will be brought in for a nominal sum of so much a mile.

The company enters into a simple contract with the car owner. This contract specifies what the company will do and binds the car owner to have his car inspected weekly by the company.

Newby Brothers declare regular weekly inspection, making repairs when actually needed, continually tightening bolts and adjusting parts, keeping cars oiled and greased, enable the owner to get the best service, and increases the life of the machine 100 per cent. The charge of \$72 a year per car allows this service to be done at a profit and guarantees to the owner that his machine will be kept in running order.

The Newbys are branching out. They are establishing a new garage in Dallas which will be operated strictly on the flat-rate club plan.

WALL JOINS STUTZ

INDIANAPOLIS, March 30.—President Frederick E. Moskovics of the Stutz Motor Car Co. has announced appointment of Col. Wm. G. Wall of this city as consulting engineer for Stutz, to collaborate with Charles S. Crawford, chief engineer. Col. Wall, for many years an official and chief engineer of the National, and formerly vice-president of the S. A. E., has long been prominent nationally in engineering circles. For several years he has been prominent in consulting engineering with headquarters in the Merchants Bank building here.

Studebaker Behind Orders Although at Full Capacity

SOUTH BEND, Ind., March 30.—All plants of the Studebaker Corp. are running at capacity, the corporation finding itself unable to meet the demand for cars, according to a statement by A. R. Erskine, president. Studebaker's March production will total about 12,000 cars while the schedule for the second quarter calls for 40,000 cars.

"It is easy to exaggerate the volume of surplus orders," said Mr. Erskine, "but I should say that business offered to us exceeds our production by 25 per cent. The usual demand is practically uniform for all of our 19 different models of cars."

EQUIPPED WITH STABILATORS

In the March 5 issue of MOTOR AGE it was erroneously stated that "snubbers all around" are regular equipment on the current Packard models. Watson stabilators are the standard equipment used on these models.

Packard Prepares for Second Big Master Salesman Contest

DETROIT, March 28.—Packard Motor Car Co. will stage its second contest for master salesman honors during the months of June, July and August, the reward being the naming of 125 victors as master salesmen and bringing them to Detroit as the guests of the company for a three weeks' outing. The rules of the contest are similar to those last year except that the master salesman degree will also be given to the 25 best used car salesmen in the entire retail organization.

The contest proper is for all retail salesmen in the Packard dealer organization. Quotas according to the sales possibilities in each territory are set and the winners are those who stand the highest with respect to their quotas. In addition to the honorary degree the winners get an insignia typifying their achievement.

DE PALMA WINS AT TANFORAN

SAN FRANCISCO, March 28.—Ralph De Palma in a Miller Special won a ten-mile race March 22 at the dirt track at Tanforan held by the Pacific Auto Racing Association of San Bruno. Frank Lockhart was second, also in a Miller Special, and Eddie Hearne was third, driving a Hearne Special. The time was slow, eight minutes twenty-two seconds, due to the poor condition of the track, on which many of the drivers refused to race. William Reid of Los Angeles and Ralph Johnson of Philadelphia had been killed on previous days, and four were injured on this occasion—Mike Moosie, San Francisco; Harold Hall, San Jose; Leigh Green, Los Angeles, and Henry Beal, Los Angeles.

Hardy Notes Improvements In General Dealer Practices

Olds President Believes Best Outlook for Immediate Business Is in Rural Sections

LANSING, March 30.—General improvement in car-selling methods and in general dealer practice and administration is seen by A. B. C. Hardy, president of Olds Motor Works, as the most encouraging features of the general automotive situation. Mr. Hardy has just completed a trip that took him to practically all sections of the country on which he studied general business conditions and the dealer situation.

Greatest improvement in general conditions was found by Mr. Hardy in the northwest, where he said business was on a much higher plane than in the recent past, with a consequent improvement in the automobile demand. Generally speaking, he said, the best outlook for immediate business is in the rural sections, due mainly to better prices for farm products and the readiness of farmers to make purchases now.

Steadying in East

In the eastern states Mr. Hardy found a steadying of business which is setting up a better frame of mind among wage earners. The middle west has been consistently good throughout the poor business in many other sections and is getting better. Start of spring activities were noticeable in such states as Kansas, Iowa, Colorado and Idaho, Mr. Hardy said.

"It is not likely that any record will be broken this year in the number of automobiles manufactured and sold," Mr. Hardy said, "but it is safe to assume that dealers will work harder and be more prosperous than they were last year." Activities of leading manufacturers in helping dealers with retail merchandising will have an important part in this general betterment, he said.

Two Chryslers Entered in Rudge-Whitworth Cup Race

PARIS, March 18 (By Mail).—Among the 54 cars entered in the 24-hour race for the Rudge-Whitworth Cup to be run on a road circuit at Le Mans on June 20 and 21, are two Chryslers, entered by the French agent for this company. This is the first time in a number of years that an American car has been entered in an important speed test in France.

The Rudge-Whitworth race, which is now an annual event, is limited to stock cars. Competitors comprise 44 French makes, 4 English, 4 Italian and 2 American. Last year the greatest distance was covered by an English Bentley of 183 in. cubic piston displacement, with 1,290 miles to its credit. Two drivers are allowed per car, but only one man can work on the car at the same time.

Expect Half Billion Year for Akron Zone's Rubber Plants

Forecast Tire Production Averaging 125,000 a Day Against 100,000 Late in 1924

AKRON, O., March 30.—More than \$500,000,000 worth of goods will be manufactured by automobile tire factories this year in the Akron district, it is estimated by authorities in the industry, on the basis of 1924 business and the anticipated business for 1925.

Production of tires, which was approximately 100,000 a day at the close of 1924, will average close to 125,000 a day in 1925, it is forecast. Present tire production is between 115,000 and 120,000 tires a day, and the majority of rubber companies are preparing to increase their output, building additions and installing new machinery.

Following the announcement that the Goodyear Tire & Rubber Co. had boosted its tire production ticket to 33,000 casings and 45,000 tubes a day, it is learned that the Firestone, Goodrich, Miller, General, India, and several of the smaller companies are increasing their output to meet large orders from dealers and manufacturers. Firestone is now producing more than 30,000 tires a day, Goodrich 25,000, Miller upward of 10,000, General 3,500, India 1,200.

MERGER RUMOR DENIED

CLEVELAND, O., March 28.—Rumors of a consolidation of automobile companies, in which the Peerless Motor Car Co. was said to figure, were definitely set at rest by Edward Ver Linden, president and general manager of the company, in a statement accompanying the annual report of the Peerless corporation sent to stockholders.

The statement read as follows:

"On behalf of the board of directors I wish to state that no bona fide offer for the consolidation of this company with any other automobile company has ever been formally considered by the board of directors nor is the board now considering consolidating with any concern."

\$1,218,000,000 Commercial Car Market in 1925 Survey

PHILADELPHIA, March 30.—A survey recently completed by the Chilton Company of Philadelphia estimates that the 1925 commercial car market will amount to approximately \$1,218,000,000.

This total was divided as follows:

Commercial Cars (new, 1924).....	\$234,000,000
Tires for Replacement	200,000,000
Gasoline	300,000,000
Oils and Greases	48,000,000
Special Bodies	75,000,000
Replacements and Supplies	99,000,000
Special Equipment (Holsts, Winches, Cranes, etc.).....	22,000,000
Labor (Repairing and overhauling)	190,000,000
Total	\$1,218,000,000

Open 24 Hours for Car Sales Here

SAN FRANCISCO, March 30.—Increase in night work offered at the "automobile department store" of the Don Lee company here has resulted in an increase in the number of men employed at night to care for work on cars which cannot be handled in the daytime. Two shifts of men are now being worked, and the shops are open for the reception of cars until 1 a. m.

The garage and service station is to be kept open all night, and if any one wishes to buy a car at any hour of the night, men competent to sell it to him are on duty in these departments, prepared to take the prospect into the sales and show rooms and deliver the car to him immediately.

Fulton Makes Hudson Device Under License Arrangement

PHILADELPHIA, March 28.—The Fulton Company, of Milwaukee, has been licensed by the Hudson Motor Specialties Company, of Philadelphia, to manufacture and sell Hudson's "New Model B" Crank Case Repair Arms. It was recently erroneously reported that the Fulton company had purchased the Hudson Motor Specialties Company, but according to a statement by the latter organization the Milwaukee concern is only operating under a license to make and distribute the product.

WILLYS-OVERLAND PROFITS

TOLEDO, March 30.—A net profit of \$2,086,645 from operations, and other income sufficient to swell the total net to \$2,970,371 for last year, was reported today by Willys-Overland Co. This is compared with \$13,002,417 in 1923. Current earnings are making a much better showing than last year. Inventories were reduced \$10,632,814, to \$22,767,335, and the company now has cash on hand amounting to \$10,497,778, with no bank loans or other current liabilities other than ordinary accounts payable.

More than half the total assets of \$66,018,335 are current. Back dividends on preferred stock amounted to \$6,559,726 at the year's end. Bonds were reduced a million. President Willys reported progress in the betterment of dealer relations. Directors may take early action on resumption of preferred dividends.

OAKLAND DESIGNER DEAD

DETROIT, March 28.—Fred H. Berger, consulting engineer with offices in this city, died after a prolonged illness. He was one of the designers of the first Oakland car.

Subscription Fraud Brought to End With Jail Sentence

Glen M. Ashbrook, Alias William King, Convicted in Ohio After Long Pursuit

NEW YORK, March 30.—With the conviction and sentencing of Glen M. Ashbrook, alias William King, one of the most important cases in recent times involving the fraudulent sale of trade magazine subscriptions comes to an end.

Ashbrook during the period of his activity covered a large part of the eastern section of the United States, soliciting subscriptions for publications of the Class Journal and Chilton companies, including Motor World, Motor AGE and The Automobile Trade Journal, as well as for other papers. The money he obtained in this way never reached the magazines, and he was never authorized to represent them.

After a long pursuit, Ashbrook was arrested in Ohio, and convicted in the state court at Portsmouth on three charges of obtaining money under false pretenses. He was fined \$75 and costs, and failing to pay them was remanded to jail, where he will remain until he pays or the court decides that sufficient penalty has been inflicted. Ashbrook spent several months in jail while his case was pending.

"Premiums" Not Delivered

Ashbrook operated under the name of the Trade Periodical Company, and it was his practice to offer as premiums with subscriptions from one to six pairs of a well-known make of overalls. These, of course, were never delivered. His arrest followed publication of a notice in Motor AGE, Motor World and The Automobile Trade Journal describing his activities. Shortly afterward he solicited a subscription from a garage owner in Portsmouth and was promptly arrested. Miller & Searl, Portsmouth, attorneys, represented the Class Journal Co. in the matter.

Ashbrook will be remembered by those who were approached by him as a husky, vigorous type of man whose right hand was missing, having been lost in the war, according to a story he frequently told. He is a good salesman and his victims were numerous.

Ford Production Increased to 7000 Cars-Trucks Daily

DETROIT, March 28.—Ford production has been increased to 7,000 cars and trucks daily, the present operation representing an increase of about 600 units a day over the schedule of the early month. Rapidly increasing demand for cars is shown in reports received from dealers and branches in all parts of the country. There are practically no dealer stocks. Tractor production has been moved up to 450 a day to care for growing demands, the company says.



Along Automobile Row



CEDAR RAPIDS, IA.—E. S. Hobel of the Red Ball Garage, Cedar Rapids, Iowa, Stutz car agent here, has secured the representation agency for the Cleveland Six also.

SAN FRANCISCO.—S. H. Chase, senior member of the firm of Chase & Morrill, San Francisco distributors for Jordan, is back at his desk after several months' severe illness.

ROCHESTER, N. Y.—An assignment of assets for the benefit of creditors has been made by the Rochester Automotive Equipment Corporation, to Attorney Edward L. Cleary, of Rochester. Claims against the business total \$53,480. An inventory shows the company's property worth \$52,480.

MINNEAPOLIS, MINN.—The Northern Tire Service Co., Minneapolis, which for six years has done a general service business, particularly in equipping the bus system out of the city will sell accessories. The company is building a service office and display room for the department. It has 18,000 square feet of floor space. E. F. Bullis is manager.

ST. LOUIS, MO.—The Orthwein Motor Corporation, Chevrolet dealer, has moved from Boyle and Forest Park to 3016-18 Locust street. Percy Orthwein is president of the company.

SAN FRANCISCO.—L. G. Peed, sales manager of Willys-Overland, Inc., of Toledo, was a visitor recently at the Bell & Boyd establishment, from which Willys-Knight and Overland cars are distributed to this territory.

NEW YORK.—The Timken Roller Bearing Company, in its statement for 1924, reports net profits after depreciation and tax reserves of \$5,805,687, or \$4.83 a share on its capital stock as against \$8,096,803 or \$6.74 a share the preceding year. The net quick position is strong, current assets amounting to \$15,342,210 as compared with current liabilities of \$842,455.

ST. LOUIS, MO.—The North Side Princeton Motor Sales Co. has opened sales rooms at 2809-11 North Grand avenue to handle Hudson and Essex cars. The new company is affiliated with the Princeton Motor Car Co., which is a Hudson and Essex dealer at 6912 Gravois avenue. Dave Garfinkel is president of both companies. Carl A. Anscuetz, Jr., is manager of the north side company.

LOS ANGELES.—Announcement is made of the appointment of Lynn C. Buxton as dealer in Willys-Knight and Overland cars. Mr. Buxton is one of the oldest dealers in Los Angeles. For several years he has been the Stearns representative and this identification will be continued.

MEMPHIS, TENN.—Maxwell-Chrysler dealers in this territory had a get-together session recently at Hotel Gayoso here to meet J. W. Frazier, assistant to the vice president and general sales manager. A luncheon was served and talks made on late features of the cars and sales plans. T. R. Harrington, district sales manager for the middle west, was also present and gave a fine report.

PHILADELPHIA.—The John Warren Watson Co., manufacturers of Watson Stabilators, has appointed the following distributors for this product: Jackson Electric Co., 711 Beacon street, Boston; L. H. Fawkes, Minneapolis, distribution for Minnesota and North Dakota; Northwestern Machine Co., 2166 Northwestern avenue, Indianapolis; Oklahoma Battery & Supply Co., Inc., Tulsa, Okla.; Concord Battery Co., 450 Park street, Jacksonville, Fla.

NEW YORK.—The Hayes Wheel Company, for 1924, reports sales of \$15,366,492 against \$19,737,725 in 1923, and net profit of \$715,264 equal to \$3.16 a share, as compared with \$1,302,066 equal to \$6.60 a share in 1923.

WALPOLE, MASS.—Alvin M. Yocum has joined the Multibestos Company in the capacity of chief engineer. Mr. Yocum is an expert on brakes and brake designs.

LOS ANGELES.—Stanley W. Smith, Inc., has been appointed downtown sales and service representative for the Hudson and Essex. These lines have been taken on in addition to Peerless. Some months ago this company was appointed Hudson and Essex representative in Hollywood. The Walter M. Murphy Co., distributor, now has completed a local sales organization that includes 13 city sub-dealers and 19 additional in the county.

TIPTON, IND.—The general Piston Ring Co., has moved to larger quarters in Tipton. The move increases the available floor space more than 100 per cent.

NEW YORK.—For the year ended Dec. 31, 1924, Spicer Manufacturing Company shows a net profit of \$968,835, equal after preferred dividends to \$2.32 a share on the common stock, as compared with \$1,075,673 or \$2.66 a share in 1923.

MEMPHIS, Tenn.—The National Autop Co., located for many years at 195 Union Ave., has moved into its new building at 483 Union avenue.

DES MOINES, Ia.—The Packard Iowa Motor Company, directing the Packard's business in this state, has leased the building formerly occupied by the Davey-Marmon Company, Eleventh and Locust streets, and will occupy it May 1. Extensive improvements are to be made to fit it into one of the finest show rooms in the city.

ST. LOUIS, Mo.—The Wedler-Shuford Co., which manufactures the Wedford Ever-Ready inclosure for open cars, has moved to 1116-24 South Grand boulevard.

RICHMOND, Ind.—The Lanphear Motor Company of Providence, Rhode Island, one of the oldest distributors in New England, has been appointed distributor for Rhode Island and the adjoining section of Massachusetts, by the George W. Davis Motor Car Company of Richmond.

NEW YORK.—C. F. Daly, vice-president and director of the Durant Motors, Inc., has been elected president of the Liberty National Bank of New York. He is also director in a number of other corporations and was for many years vice-president of the New York Central Railroad System.

TOLEDO.—M. S. McNay, for the past several years in the sales organization of The Book Bearing Company, Toledo, Ohio, has been appointed sales manager, according to announcement by R. E. Clingan, general manager of the company.

ST. LOUIS, Mo.—R. E. Olds, chairman of the Board of Directors of the Reo Motor Car Company, was a visitor at the Kardell Motor Car Co., St. Louis Reo distributors recently. He spoke confidently of the business outlook and said his company was doing the largest business in its career.

CANTON, O.—The Heingartner & Gill Co., 601 Tuscarawas, West, has been chartered with an authorized capital of \$25,000 to wholesale and retail tires, tubes and accessories. Incorporators are Willis G. Gill, Nellie M. Gill, Homer H. Heingartner, Flora B. Heingartner and Paul E. Miller.

KNOXVILLE, Tenn.—The L. S. Harris Motor Co., distributor of the Maxwell and Chrysler line in part of the Tennessee territory, announces the appointment of Captain Walter Wilkinson as general sales manager.

ST. LOUIS, Mo.—James W. Ward, who has been in the selling end of the automobile business in St. Louis for five years, has opened a used car store at 3116 Locust street, styled the J. W. Used Cars Store.

SALEM, O.—Papers have been filed with the secretary of state chartering the Collier Auto Co., with a capital of \$12,000, to deal in motor vehicles. H. J. Beardsley, T. C. Rose, Herbert Delfs, E. M. Zieger and P. J. Collier are the incorporators.

MIAMI, Fla.—The Jordan-Miami Co. was organized and incorporated at Miami the early part of March, and will distribute the Jordan in the South Florida territory. Capital is \$35,000, officers including J. B. Dackworth, president and treasurer; and A. L. Morgan, vice-president and secretary.

STEBENVILLE, O.—The Steubenville Traffic Signal Headlight Co. has been chartered with a capital of \$10,000 to manufacture traffic headlight signals. Incorporators are Walter Sheehan, W. R. Alban, Sadelle Welday, Harold L. Votey and E. M. Morrow.

ST. LOUIS, Mo.—Weber Motor Car Co., Studebaker distributor in St. Louis, has established a separate accessory department under the management of Homer Weber to handle Lomar shock absorbers and Majestic bumpers besides retailing accessories to Studebaker owners and buyers.

MINNEAPOLIS.—The Kremer Motor Co., Minneapolis, Minn., has bought the local factory of the Oakland Motor Car Co. It has been retailing the Oakland. The company will maintain a parts depot. F. N. Dahle, Oakland service manager for the district for 15 years, will have the same position with the Kremer Co. George Kremer is general manager.

SHENANDOAH, Ia.—The Christ Motor Co. has been reincorporated as the Shenandoah Motor Co. and its capital stock fixed at \$30,000. G. F. Christ is president; C. W. Abercrombie, Hiawatha, Kans., has been added to the concern as general manager.

SAN FRANCISCO.—Officials of the Butler-Veitch Co., Marmon distributors in this territory, were hosts at a banquet at which the salesmen and department heads were the guests of honor. The organization reported 56 actual sales closed during the week of the San Francisco automobile show in February.

GENESEO, Ill.—Lee Hoover and Fred Searles have organized the Nash Sales & Service Co., occupying the Hoover garage on East Exchange street, which has been remodeled for sales room and display.

SAN FRANCISCO.—The H. O. Harrison Co., Hudson and Essex distributor in San Francisco, announce the appointment of Warren Ellsworth in the Mission district, and Dan Caselli, in the North Beach territory, as metropolitan dealers for these cars. The Harrison company now has eight metropolitan agencies in San Francisco.

DETROIT.—Ted F. Drews, for the past two years service manager for the Gray Motor Corporation, has been named manager of purchases, succeeding L. E. Foster, who resigned.

MEMPHIS, Tenn.—W. H. Loudon has been appointed manager of the Memphis district for Oakland Motor Car Co., the territory including the states of Mississippi, Louisiana, Arkansas, western Tennessee and parts of Texas and Alabama. Mr. Loudon has been connected with the sales department of Dodge Brothers for six years, in the past two years as field representative in the Indianapolis and Detroit districts.

WASHINGTON.—August Zimmerman, chief of the section of cars and trucks of the Automotive Division, U. S. Department of Commerce, has resigned that position to accept a position with the sales force of the Maxwell-Chrysler agency in Baltimore, preparatory to entering the general sales department of the Maxwell-Chrysler Co. at Detroit. He has been section chief of the division since July of 1923.

DETROIT.—Rickenbacker Motor Co. announces appointment of A. C. Webb of New York city as eastern sales manager with temporary headquarters at 1777 Broadway, New York. Mr. Webb has been a retail sales manager, a wholesale sales manager and a distributor.

With the Associations

Lea Given Secretaryship

LOUISVILLE, Ky., March 30.—J. Garland Lea, who for several years has been assistant automobile editor of the Courier-Journal, Louisville, Ky., has been appointed secretary-treasurer of the Louisville Automobile Dealers' Association. He succeeds George T. Holmes, who resigned at the close of the 1925 auto show to become manager of the Leyman Motor Co., Buick dealer.

Reorganize in Sacramento

SACRAMENTO, Cal., March 30.—After several preliminary meetings automobile dealers of Sacramento, city and county, have reorganized as the Motor Car Dealers' Association. The following officers were elected: President, J. J. Jacobs, of the J. J. Jacobs Motor Co., Studebaker distributor; vice-president, George Barnes, Sacramento Buick Co.; secretary, Henry Spring, Jordan car and White truck distributor.

Directors: Jack Ballard, Ballard Motor Co., Lincoln distributors; H. F. Goodrich, Goodrich Motor Co., Ford dealer; W. H. Mannix, Don Lee Company, Cadillac; Spence Elliott, W. I. Elliott-Star Co.

The association will meet every two weeks with luncheon at Hotel Senator, Sacramento.

Election at Montreal

MONTREAL, March 28.—The following officers for the ensuing year were elected at a recent meeting of the shareholders of the Montreal Automobile Trade Association, Ltd.

President, Florian Leduc; vice-president, J. E. Smith; treasurer, Major F. T. McKean, D. S. O.; secretary, Alexander Renaud.

Directors elected were J. O. Linteau, A. M. Jaques and F. T. Just. Directors re-elected were: Florian Leduc, J. O. Linteau, J. E. Smith and A. M. Jaques.

To Name County Chairmen

BALTIMORE, Md., March 28.—Arrangements are being made by the Garage and Accessories Dealers' Association of Maryland to hold a big mass-meeting in the near future at which time a chairman for each county in the state will be elected. It is a part of an energetic membership campaign during which the association hopes to get 1,000 additional members. Branches of the organization have been established in Westminster and Havre de Grace.

Award Show Sales Leaders

ST. LOUIS, Mo., March 28.—Awards for the best three retail sales records during the automobile show of the St. Louis Automobile Dealers' Association were made at a luncheon of automobile executives.

First prize, \$100, went to A. J. Schaefer of the More Automobile Co., Marmon distributor, whose net sales totaled \$10,378; second prize, \$50, went to J. A. Van Loon, of the Cadillac Automobile Co. of Missouri, Cadillac distributor, whose net sales totaled \$9,571; third prize, \$25, was won by Lester I. Weiss of the Cadillac Co., whose net sales totaled \$8,800.

In figuring the sales, the amount allowed for used cars turned in on sales was deducted from the selling price of the car and the records included the sales of accessories and special equipment.

Tire Dealers Organize

CANTON, O., March 30.—Uniform service and protection for the automobile tire purchaser is the aim of the newly organized Stark County Tire Association. The association is composed of about 50 of the leading tire dealers of this city and the surrounding territory. C. M. Shriver is president.

May Join Central Body

MINNEAPOLIS, March 28.—The Minneapolis Tire Dealers' Association is expected to be the next trade group to join with the Associate Automotive Trades Association. The tire men are leaning toward such affiliation.

Already the Minneapolis Battery Men's Association is in, the service station and storage garages, dealers in new and used cars, and then there is an unclassified list of 25, such as the accessory dealers and others who have not enough numbers to warrant an organization.

The plan which is now effective is to have a central board, of which the president of each trade is a member, and a group elected at large.

Each group has its own meeting once a month and the whole organization meets once in two months.

Elect at Galesburg

Galesburg, Ill., March 28.—At the annual meeting of the Galesburg Automobile Dealers Association new officers were elected for the coming year as follows: President, Lee W. Wright; vice-president, George Shirck; secretary-treasurer, A. G. Miller. The four vacancies on the board of directors were filled by the election of E. T. Byram, W. P. Martin, W. H. Callender, and J. D. Hazlett. It was voted to stage a spring show of cars on April 2, 3 and 4, in each sales agency. Each firm will make an elaborate display with artistic decorations and there will be joint advertising so that all will benefit equally by the demonstration. Galesburg distributors, encouraged by the activity displayed in the buying field, look forward to a prosperous sea-

son. Sales here are running ahead of a year ago and there are more prospects.

Discuss Service Betterments

ATLANTA, Ga., March 28.—Ways and means by which the garages and service stations of Atlanta and the adjacent suburban territory can improve their service to the automobile-owning public, and place the service end of the business on a higher plane, were discussed at a meeting of the recently-formed Atlanta Garage Association.

It has been decided by the association to conduct a co-operative advertising campaign in the Atlanta newspapers similar to the Christmas campaign of the accessory trades last year and which accomplished such excellent results. This advertising will aim to win the confidence of the public in the service end of the business.

Describes Apprentice Plan

NEW YORK, March 28.—How the Ohio-Buick Co. of Cleveland is using the apprentice system to keep its service department constantly supplied with trained mechanics, was described in a paper presented by J. F. McDonald, service manager of that company, at the monthly meeting of the Automotive Service Association of New York.

In the discussion following the paper it was clearly evident that service managers in the Metropolitan district regard the shortage of skilled labor as one of their most pressing problems and that it is almost imperative that steps be taken promptly to attract desirable young men to the maintenance division of the industry and to provide for their proper training.

The educational work now being carried on by the Ohio-Buick was of particular interest to the service managers present because it showed how one large distributor has arrived at a practical solution of his labor problem. A description of this company's educational system was published in the March 19 issue of MOTOR AGE.

Rubber Association Elects

MONTREAL, March 28.—The Rubber Association of Canada has elected officers as follows: President, F. E. Partridge; vice-president, J. D. Hathaway; treasurer, John Westren; assistant treasurer, Joseph O'Mara; manager and secretary, A. B. Hannay.

Set Meeting Dates

BIRMINGHAM, Ala., March 28.—The midsummer meeting of the Alabama Automotive Trades Association will be held in Tuscaloosa, Ala., on July 20-21.

Last Half of 1924 for Rex Co. Beat Best Previous Year

Makers of Open Car Enclosures Hit High Pace During Wave of Closed Car Popularity

CONNERSVILLE, Ind., March 23.—The Rex Manufacturing Company, of Connorsville, producers of motor car tops and enclosures for open cars, announces that it did more business in the last six months than during any previous full year. R. H. Crawford, sales manager, states that this half year period showed six per cent more sales than the best total of any previous year.

In order to take care of this increasing business, the Rex company took over in 1924 an unused piano factory in Connorsville, which gave them 75,000 more feet of floor space and practically doubled their manufacturing facilities. During the latter part of 1924 the new factory was in full operation.

Approximately 51 per cent of the business done in 1924 was retail—that is, sales to distributors and dealers which are ultimately sold to the car owner; about 47 per cent was to motor car manufacturers; approximately two per cent was exported to foreign countries.

"There seems to be a prevailing opinion that because there is a decided tendency toward the closed car due to the fact that the coach type of car can be purchased at only a little higher price than the open car that the open car is doomed to go," states R. H. Crawford, sales manager.

Fewer Open Cars This Year

"There is no question but that there will be fewer open cars built this year than in any previous year. The car manufacturer will give the public what it wishes. But I also believe that in two years' time there will be fully as many open cars, if not more, built than this year.

"But as far as our business is concerned the vital fact stands out that the closed-car idea has given impetus to the making of an enclosed open car in the winter."

"We have hardly scratched the surface of our market as yet, and the very fact that most persons want a car in which they can ride in comfort in the most disagreeable weather makes for a more ready acceptance of our product within our market. We do not as yet supply 1 per cent of all open cars with our equipment. So it can readily be seen that there are still infinite possibilities for sales."

FRANKLIN ADDING MEN

SYRACUSE, N. Y., March 28.—During the past two months the Franklin Automobile Company, Syracuse, N. Y., has been hiring additional employees in preparation for a big production year.

At the end of January, orders for Franklin cars were coming in at the rate of ninety a day, factory officers say.

Coming Motor Events

Automobile Shows

Asbury Park, N. J. March 30-April 4

Asbury Park Automotive and Radio Show, Asbury Park Automotive Assn. E. M. Heimlich, show manager.

Burlington, Vt. April 8-11

Annual Automobile Show, University of Vermont, auspices Ethan Allen Club.

Detroit May 20-23

Second annual Automotive Maintenance Equipment Show, General Motors Bldg. Conducted by National Automobile Chamber of Commerce, with co-operation of Motor and Accessory Manufacturers' Assn., National Automobile Dealers' Assn., Society of Automotive Engineers, Automotive Equipment Assn., Automotive Electric Assn., and Automotive Manufacturers' Assn. Sam Miles, Manager.

Galesburg, Ill. April 2-4

Spring Show in salesrooms of Galesburg Automobile Dealers' Association members.

Holdrege, Neb. April 8-11

Annual Automobile and Style Show, auspices Holdrege Commercial Club.

Conventions

Minneapolis April 8-9

Fourth annual convention Minnesota Motor Trades Association, Curtis Hotel.

Pittsburgh May 6-9

Ninth annual meeting American Gear Manufacturers' Assn.

Foreign Shows

Geneva, Switzerland. March 28-29

International Motor Exhibition.

Bandoeng, Batavia. April 8-14

Automotive Exhibition by the Netherlands Indies Jaerbeurs.

Melbourne, Australia. April 22-May 7

International Automobile Show, Chamber of Automotive Industries and Royal Automobile Club of Victoria.

Milan, Italy. April 11-27

International Show

Races

Fresno, Cal. April 30

Charlotte, N. C. May 11

Wanted to Run a Tea Room But She Operates Tire Shop —and Successfully

DECATUR, Ill., March 30.—Although secretly longing for many years to operate a tea room, Miss Ethel M. Carter of this city was never able to gratify this ambition. Instead, she owns and operates a tire shop. Miss Carter drifted into the business as the result of her father's ill health. When he died she took complete charge.

All of the office work and the general routine of the business has been systematized to a fine point and the record of every tire bought and sold is kept indefinitely. "Men forget so easily," Miss Carter explained. "Many times they bring back tires for adjustment and insist that they have been used only for six months. When the record is looked up, it sometimes proves that they were a year out of their reckoning." Records of all

repairs coming in and going out are kept on file in much the same manner as the tire inventory. The fact that the firm has only lost eight cents in discounts in nine years demonstrates that the system is highly efficient.

Under Miss Carter's management, the business has greatly increased and it was recently necessary to secure larger quarters, moving from the old location at 245 North Main street to 234-236 North Franklin street, the present location being eight times as large as the original stand, while the equipment has also been radically changed. There are a dozen men employed who look after various features of tire overhauling and the business is now one of the largest of the kind in central Illinois.

OUTLINES TRAFFIC PROGRAM

DETROIT, March 28.—Citing narrow streets and inadequate parking facilities as among the greatest menaces to the continuance of success in the automobile business, T. G. Philips, consultant of the Detroit City Plan Commission, outlined to the Detroit Automobile Dealers' Association, steps that are being made here to provide for adequate traffic facilities for the next fifty years.

In the main the plans are for greatly widened streets, the major ones of which will be 204 feet in width, with provision for four traction lines and for four lines of vehicular traffic. As a start toward this system the city and the Wayne County Road Commission are buying property on the outskirts for rights of way and will build its system "from the outside in." Building from the outside

in—"getting what you can while you can get it"—was described by Mr. Phillips as the best method of city planning.

Though millions of dollars will be required to carry out the work of city planning here, this will all be recouped in ten years, said Mr. Phillips, through the increase in property valuation.

START THEIR OWN BUSINESS

ROCKFORD, Ill., March 30.—The Cent-been organized here and has occupied a new building at 714-718 Market street. Everett Holmbeck and Harry Molander compose the new firm. Both have been employed with local firms as mechanics and will now embark in business for themselves. They will do a general repair and storage business and also handle a line of accessories.

Transmissions Form Chief Topic at S. A. E. Gathering

Indiana Section Hears Several Interesting Technical Talks Concerning New Developments.

INDIANAPOLIS, March 28.—The Indiana Section of the S. A. E. staged a transmission meeting that proved very interesting. The general subject was "New Developments in Transmissions" and at least three new types of development were described and shown while several new features of other developments were related.

E. B. Sturgis, of the Weise Engineering Company, presented descriptions, slides and models of several variations of a genuinely automatic transmission which his company has developed. In these types a spherical flywheel is used inside of which an intricate mechanism engages and automatically transmits power from zero to 1,000 to 1 without the aid of clutch or conventional gear-set. It is a development of a semi-automatic transmission which the Weis Engineering Company had previously presented at S. A. E. meetings.

Another novelty was shown by S. O. White, of the Warner Gear Company, in which the gear clutches of a special transmission are hydraulically operated. This new design is a development of a German production with hydraulically operated gears.

Shows Nichols Device

The Nichols mechanical gear shifting device was shown by A. C. Nichols, Jr., of Oshkosh, and J. L. Alspaugh of Columbus, Ohio, presented a description and working model of a semi-automatic development of the mechanical gear changer in which the operator can mechanically select the gear for changing, or use the semi-automatic variation by which operation of the clutch alone will bring about a succession of gear changes.

B. C. Buxton, vice-president of the Apperson company, narrated the successful three-year experience of the Apperson company with the Cutler-Hammer gear shifter which is standard on this car, and has proved very satisfactory with several thousand owners. Mr. W. Campbell of the Campbell Transmission company expressed the thought that pioneering for better transmissions and improved methods of gear shifting seem to have at last borne fruit in some respects, but brought out that price and costs still have great weight in holding design to conventional practice. The last paper was that of Charles Trask who presented the case of the friction transmission which is still performing satisfactory service on various types of tractors and commercial jobs. He suggested that for light cars which approach cycle size the friction type might be found useful still in spite of the fact that the passenger car has now abandoned the type. General discussion followed each speaker.

SQUEEKS and RATTLES

"A RIVER IN ITALY"



"What excuse had you for driving sixty miles an hour through the city?" demanded the Judge sternly.

"I was just hustling to get home so I could get back to the cross-word puzzle I have been working on," explained the motorist.

"Case dismissed. Come back into my consultation room; I want to ask you about a couple of words that have stumped me," said the Judge.

—Cincinnati Enquirer.

LIFE AT THE CAPITAL

"Doesn't your wife motor with you any more?"

"No," answered Mr. Chuggins. "She's too nervous. Every time a cop shoots at a bootlegger she thinks we've had another blowout."

—Washington Star.

She: We made fifty miles an hour coming home in Bill's car last night.

Her: What did you quarrel about, dear?

—Denver Parakeet.

"Poor Jerry smashed his car and got pinched yesterday."

"Really? What was the charge?"

"Driving under the influence of woman."

—Bowdoin Bearskin.

Inquiring Reporter: "What is a Tool Inspector?"

Tool Foreman: "One who brings more into the tool room than ten can carry out. 'Out again, In again, Back again, Finnegan.'"

—The Exhaust Port.

AERIAL NOTES

Rady: I got Denver last night.

O'Fann: Yeh?

Rady: Yeh, heard the Poet Lariat of Colorado on my rodeo.

—Chicago Phoenix.

Traveler, to companion: "What makes you so happy?"

Companion: "I beat the railroad company."

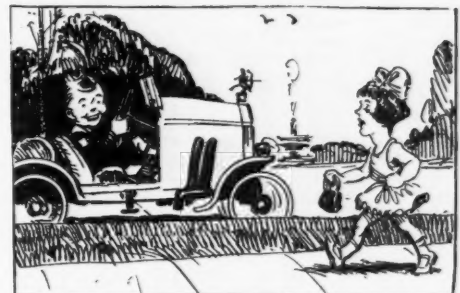
Traveler: "How come?"

Companion: "I bought a round trip ticket and I'm not going back."

Have your laugh and then take this one—How about inferior work that leaves the shop, and the customer does not return? Same thing.

—The Exhaust Port.

A SAFE HAZARD



Chaperone—Where have you been?

Future Chaperone—Out motoring with John. Did I do wrong?

"I don't know, but I suspect so."

—Amherst Lord Jeff.

TRAFFIC DEATHS REDUCED

WASHINGTON, March 28.—Marked reduction in the traffic death rate took place in a large number of cities during the last few months of 1924 and January, 1925, according to figures given by George M. Graham, of the National Conference on Street and Highway Safety. He calls attention to the fact that in 28 of 68 cities having a population of 100,000 or more there has been a reduction in fatalities and that 7 of the 10 leading cities of the country showed a reduction of 34 per cent in fatal automobile accidents during January, 1925, as compared with the same month last year.

Grade crossing accidents in the first 11 months of 1924 were only 1,957, as

compared with 2,043 in the same period of 1923, it is shown by records of the American Railway Association.

RECORD FORCE EMPLOYED

MUSKEGON, Mich., March 30.—The Piston Ring Company, of Muskegon now has the largest number of employees on its roll in the history of the company, according to a factory announcement. The company manufactures Quality, No-Leak-O, Sealdrain and Drainoil rings. Its replacement business has grown rapidly in the past three years and with the working force at a record maximum at the present time it has not yet entered upon its busiest season.

Prices and Weights of Current Passenger Car Models

SHIP.	WT.	PASS.	BODY STYLE.	PRICE
ANDERSON	"41"			
2650	5-p	Touring	\$1,195	
2675	4-p	Sp. Touring	1,445	
2925	2-p	Coupe	1,425	
2875	5-p	Sedan	1,695	
2925	5-p	Sp. Sedan	1,895	
2975	7-p	Touring	1,595	
3200	7-p	Sedan	1,945	
APPERSON	"6"			
3100	5-p	Sp. Phaeton	\$1,550	
3145	3-p	Coupe	2,350	
3470	5-p	Sp. Sedan	2,395	
3815	5-p	Phaeton	2,485	
3900	7-p	Phaeton	2,535	
3955	5-p	Sport Phaeton	2,300	
3815	7-p	Sport Phaeton	2,900	
4180	5-p	Sedan	3,485	
4200	7-p	Sedan	3,585	
4340	5-p	Sport Sedan	3,750	
4380	7-p	Sport Sedan	3,850	
5-p	Sp. Phaeton	2,550		
3-p	Coupe	2,800		
4-p	Brougham	2,650		
5-p	Sp. Sedan	2,850		
AUBURN	"4"			
5-p	Touring	\$795		
2610	5-p	Special Touring	1,395	
2900	5-p	English Coach	1,945	
2885	5-p	Sedan	1,595	
3225	5-p	Sp. Touring	1,895	
3550	5-p	Sedan	2,550	
3510	5-p	Brougham	2,395	
3550	7-p	Sedan	2,550	
4-p	Sport Roadster	1,975		
4-p	Club Roadster	2,075		
4-p	Sport Brougham	2,250		
5-p	Sedan	2,350		
BARLEY	"6" 6-50			
2750	5-p	Touring	\$1,395	
2800	5-p	Sp. Touring	1,495	
3100	5-p	Sedan	1,850	
3150	5-p	Sp. Sedan	2,250	
BUICK	"Standard"			
2750	2-p	Roadster	\$1,150	
2800	2-p	Roadster Encl.	1,190	
2920	5-p	Touring	1,175	
2970	5-p	Touring Encl.	1,250	
2960	2-p	Coupe	1,375	
3075	4-p	Coupe	1,565	
3185	5-p	Dbl. Service Sedan	1,475	
3245	5-p	Sedan	1,665	
3050	5-p	Coach	1,295	
"Master"				
(120 in. W. B.)				
3285	2-p	Roadster	1,365	
3335	2-p	Roadster Encl.	1,400	
3465	5-p	Touring	1,395	
3540	5-p	Touring Encl.	1,475	
3770	4-p	Coupe	2,125	
3850	5-p	Sedan	2,225	
3560	5-p	Coach	1,495	
(128 in. W. B.)				
3485	3-p	Sp. Roadster	1,750	
3550	5-p	Sp. Touring	1,800	
3610	7-p	Touring	1,625	
3690	7-p	Touring Encl.	1,700	
3745	5-p	Country Club	2,075	
3905	5-p	Brougham Sedan	2,350	
4030	7-p	Limousine	2,525	
3995	7-p	Sedan	2,425	
3850	7-p	Town Car	2,925	
CADILLAC	"V-63 Standard Line"			
4190	4-p	Roadster	\$3,185	
4280	7-p	Touring	3,185	
4200	4-p	Phaeton	3,185	
4610	5-p	Coach	3,185	
4610	7-p	Sedan	3,585	
4380	4-p	Victoria	3,275	
4525	5-p	Landau	3,650	
4655	7-p	Std. Imperial	4,010	
"Custom Built"				
(132 in.)				
4260	2-p	Coupe	3,975	
(138 in.)				
4400	5-p	Coupe	4,350	
4490	5-p	Sedan	4,550	
4590	7-p	Suburban	4,650	
4645	7-p	Imp. Suburban	4,950	
CASE	J. I. C.			
3260	3-p	Roadster	\$1,340	
3290	5-p	Touring	1,885	
3470	5-p	Sp. Touring	2,160	
3570	4-p	Sub. Coupe	2,480	
3640	5-p	Sedan	2,590	
3650	5-p	Brougham	2,590	
"X"				
3020	2-p	Roadster	1,670	
3050	5-p	Touring	1,695	
3380	5-p	Sub. Coupe	2,390	
SHIP.	WT.	PASS.	BODY STYLE.	PRICE
3400	5-p	Sedan	2,485	
3380	5-p	Victoria	2,390	
3950	7-p	Touring	2,475	
4320	7-p	Sedan	3,325	
CHANDLER	"SS"			
3090	2-p	Roadster	\$1,795	
3132	4-p	Roadster	1,785	
3084	5-p	Touring	1,595	
3223	7-p	Touring	1,735	
3284	4-p	Royal Dispatch	1,885	
3309	5-p	Coach	1,595	
3309	5-p	Chummy Sedan	2,045	
3469	5-p	Met. Sedan	2,195	
3428	5-p	Sedan 4 d.	1,995	
3521	7-p	Sedan	2,195	
3598	7-p	Limousine	3,095	
CHEVROLET	"Superior"			
1690	2-p	Roadster	\$525	
1790	5-p	Touring	525	
1955	5-p	Phaeton De Luxe	640	
2005	4-p	Coupe	725	
1880	2-p	Utility Coupe	715	
5-p	Coach	735		
2070	5-p	Sedan	825	
CHRYSLER	(112 3/4 in. W. B.)			
2805	4-p	Roadster	\$1,625	
2730	5-p	Touring	1,395	
2785	5-p	Phaeton	1,495	
2935	4-p	Coupe	1,895	
3060	5-p	Sedan	1,825	
3085	5-p	Imperial Sedan	2,065	
3090	5-p	Crown Sedan	2,195	
2995	5-p	Brougham	1,965	
(118 3/4 in. W. B.)				
3225	5-p	Town Car	3,725	
CLEVELAND	"31"			
2400	5-p	Touring	\$895	
2600	5-p	Sedan	1,195	
"43"				
2750	5-p	Touring	1,095	
2810	5-p	Touring De Luxe	1,195	
2830	3-p	Coupe	1,295	
2870	3-p	Spec. Coupe	1,395	
3040	5-p	Spec. Sedan 4 d.	1,495	
3190	5-p	Sedan De Luxe	1,695	
3190	5-p	Sport Sedan	1,725	
2990	5-p	Brougham	1,545	
2990	5-p	Coach	1,295	
COLE	"MASTER"			
3675	4-p	Volante Tour.	\$2,325	
3795	7-p	West. Tour.	2,325	
3675	4-p	Aero-Vol. Tour.	2,475	
4055	5-p	Brouette Sedan	3,225	
4000	7-p	Royal Sedan	3,225	
4100	7-p	Royal Limousine	3,325	
CUNNINGHAM	"V-6"			
4600	7-p	Touring	\$6,300	
4500	4-p	Sp. Touring	5,800	
4700	4-p	Coupe	7,150	
5000	6-p	Sedan	7,650	
DAGMAR	"6-70"			
3800	4-p	Sp. Touring	\$3,500	
4200	4-p	Petite Coupe	4,500	
3700	4-p	Phaeton	3,500	
3750	4-p	Roadster	3,500	
3800	6-p	Tourer	3,500	
4200	4-p	Petite Sedan	4,500	
4500	4-p	De Luxe Coupe	4,750	
4700	5-p	Sedan	4,700	
4800	7-p	Sedan	4,750	
"6-60"				
3100	2-p	Roadster	1,785	
3200	4-p	Sp. Touring	1,785	
3150	5-p	Touring	1,985	
3400	2-p	Coupe	2,345	
3500	5-p	Sedan	2,345	
DANIELS	"24-38"			
4150	4-p	Touring	\$6,800	
4765	7-p	Touring	6,900	
4600	4-p	Sedan	7,600	
5200	7-p	Sedan	7,800	
DAVIS	"90"			
2650	4-p	M. o'War Road.	\$1,495	
2915	4-p	Legionnaire Tour.	1,495	
2750	5-p	Phaeton	1,395	
3070	5-p	Sedan	1,995	
3065	5-p	Berline Sedan	1,995	
2700	5-p	Brougham	1,595	
"91"				
2835	4-p	Roadster	1,795	
3020	5-p	Phaeton	1,695	
3245	5-p	Sedan	2,295	
3050	5-p	Brougham	1,895	
3215	5-p	Berline Sedan	2,295	
DODGE BROTHERS				
2473	2-p	Roadster	\$855	
2593	2-p	Special Roadster	955	
2567	5-p	Touring	885	
2695	5-p	Spec. Touring	985	
2708	2-p	Coupe "B"	995	
2823	2-p	Spec. Coupe "B"	1,095	
SHIP.	WT.	PASS.	BODY STYLE.	PRICE
2995	5-p	"B" Sedan	1,095	
3077	5-p	Spec. "B" Sedan	1,195	
3020	5-p	Sedan A	1,245	
3107	5-p	Spec. "A" Sedan	1,330	
2723	5-p	Coach	1,095	
2823	5-p	Spec. Coach	1,195	
DORRIS	"6-80"			
4120	4-p	Pasadena Tour.	\$4,150	
4115	7-p	Touring	4,150	
4193	4-p	Coupe	4,985	
4200	5-p	Sedan	5,550	
4310	7-p	Sedan	5,800	
DUESENBERG	Straight "8"			
3920	3-p	Roadster	\$6,500	
3700	5-p	Phaeton	6,250	
3920	7-p	Phaeton	6,750	
3980	4-p	Sp. Phaeton	6,500	
4000	4-p	Coupe	7,500	
4350	7-p	Sedan	7,800	
DU PONT	"D"			
3300	2-p	Roadster	\$2,600	
3550	5-p	Touring	2,600	
3550	7-p	Touring	2,750	
3800	5-p	Touring Sedan	3,400	
DURANT	"A-22"			
2300	2-p	Roadster	\$1,080	
2225	5-p	Touring	830	
2300	5-p	Touring F. W. B.	940	
2357	2-p	Business Coupe	935	
2395	4-p	Coupe	1,160	
2505	5-p	Sedan	1,190	
2430	5-p	Coach	1,050	
ELCAR	"4-41"			
2560	5-p	Touring	\$995	
2585	5-p	Demi Sp. Touring	1,095	
2641	5-p	Sportster	1,195	
2779	5-p	Sp. Sedan	1,695	
2900	5-p	Sedan	1,495	
2779	5-p	Brougham 3d	1,265	
5-p	Sp. Brougham	1,395		
"6-51"				
2600	5-p	Demi Sp. Tour.	1,220	
5-p	Sp. Touring	1,420		
2779	5-p	Sp. Sedan	1,920	
2900	5-p	Sedan	1,720	
2779	5-p	Brougham	1,490	
5-p	Sp. Brougham	1,620		
"8-80"				
3000	3-p	Sp. Roadster	2,265	
3700	5-p	Roadster	2,315	
3700	5-p	Sp. Touring	2,165	
7-p	Sp. Touring	2,265		
4000	5-p	Brougham	2,865	
5-p	Sedan	2,265		
4050	7-p	Sedan	2,765	
ESSEX				
2130	5-p	Touring	\$900	
2305	5-p	Coach	895	
FLINT	"55"			
3145	4-p	Spec. Roadster	\$1,950	
3145	4-p	Touring	1,595	
3310	4-p	Sp. Touring	2,050	
3455	4-p	Coupe	2,195	
3585	5-p	Sedan	2,285	
5-p	Brougham 4 d.	2,735		
"40"				
2400	5-p	Touring	1,285	
5-p	Sedan 4 d	1,580		
2720	5-p	Brougham	1,620	
FORD	Without Starter and Dem. Rims			
1369	2-p	Runabout	\$260	
1494	5-p	Touring	290	
With Starter and Dem. Rims				
1521	2-p	Runabout	345	
1644	5-p	Touring	375	
1749	2-p	Coupe	520	
1927	5-p	Sedan, Fordor	660	
1882	5-p	Sedan, Tudor	580	
FRANKLIN	"11-A"			
2800	3-p	Sport Roadster	\$2,800	
2845	5-p	Touring	2,650	
2965	3-p	Coupe	2,700	
3175	5-p	Sedan	3,200	
3080	5-p	Sport Sedan	3,350	
3275	7-p	Limousine	3,500	
3135	7-p	Cabriolet	4,400	
GARDNER	"Series 5"			
2520	3-p	Roadster	\$945	
2545	3-p	Spec. Roadster	1,045	
2550	3-p	Radio Roadster	1,185	
2555	5-p	Touring	995	
2610	5-p			

Prices and Weights of Current Passenger Car Models

SHIP.				SHIP.				SHIP.			
WT.	PASS.	BODY STYLE	PRICE	WT.	PASS.	BODY STYLE	PRICE	WT.	PASS.	BODY STYLE	PRICE
LOCOMOBILE "48"				OLDSMOBILE "30"				RICKENBACKER			
5080	4-p	Sportif Tour.	\$7,400	2885	5-p	Landau Sedan	1,645	3800	4-p	Sportster	3,300
5080	7-p	Touring	7,400	2145	2-p	Roadster	\$390	3970	5-p	Touring	3,300
5000	5-p	Victoria Sedan	9,900	2270	2-p	Sp. Roadster	985	4400	5-p	Sedan	4,000
5464	7-p	Brougham	9,900	2200	5-p	Touring	890	D			
5640	7-p	Tour. Limousine	9,500	2360	5-p	Sp. Touring	1,015	2864	4-p	Sp. Roadster	\$1,595
5658	7-p	Encl. Drive Lim.	9,900	2380	2-p	Bus. Coupe	1,045	2880	5-p	Sp. Touring	1,395
5624	7-p	Cabriolet	10,250	2460	4-p	Coupe	1,175	3050	4-p	Coupe	1,895
J-6				2410	5-p	Coach	1,075	5-p			
5-p		Touring	1,600	2570	5-p	Sedan	1,285	3160	5-p	Coach Brough.	1,595
5-p		Sedan	2,000	2740	5-p	DeLuxe Sedan	1,375	3160	5-p	Sedan	1,995
5-p		Brougham	2,100	OVERLAND "91" 4				"A"			
J-3				(100 in. W. B.)				3326 4-p Sport Phaeton 2,195			
5-p		Roadster	2,150	1769	2-p	Roadster	\$495	3440	4-p	Coupe	2,695
5-p		Touring	1,785	1863	5-p	Touring	495	3585	5-p	Sedan	2,795
5-p		Sedan	2,185	2177	2-p	Coupe	635	3485	5-p	Coach Brough.	2,395
5-p		Brougham	2,235	2180	5-p	Sedan	715	ROAMER "6-54-E"			
"4" TV				2004	5-p	Coupe Sedan	595	(118 in. W. B.)			
4600	2-p	Roadster	\$5,400	(113 in. W. B.)				3100	2-p	Roadster	\$2,685
4600	4-p	Sport Touring	5,600	5-p		Sta. Sedan	985	3100	4-p	Tourer	2,485
4700	7-p	Touring	5,700	5-p		Sedan De Luxe	1,150	3300	4-p	Sp. Touring	2,750
4900	4-p	Coupe	6,720	PACKARD "6"				3700	2-p	Touring	2,685
5200	5-p	Tour. Sedan	6,720	(126 in. W. B.)				3800	2-p	Cabriolet	3,285
5200	7-p	Tour. Sedan	6,810	3643	4-p	Roadster	\$2,785	(138 in. W. B.)			
5200	7-p	Sp. Sedan	6,600	3658	5-p	Touring	2,585	4100	5-p	Spec. Sedan	4,250
5200	7-p	Sub. Sedan	7,000	3695	4-p	Sp. Touring	2,750	4200	7-p	Suburban Sedan	3,950
5100	7-p	Limousine	6,900	3753	4-p	Coupe	2,585	3650	4-p	Sport "4-75-E"	3,650
5200	7-p	Town Car	9,000	3876	5-p	Coupe	2,685	3200	2-p	Spec. Speedster	3,785
"Light 6" SV				3937	5-p	Sedan	2,585	ROLLIN			
3700	2-p	Roadster	2,600	3974	5-p	Sedan Limousine	2,785	2360	5-p	Touring	\$1,155
3600	5-p	Touring	2,600	3793	7-p	Touring	2,735	2405	3-p	Coupe	1,325
3850	4-p	Coupe	3,100	4043	7-p	Sedan	2,785	2595	5-p	Brougham	1,325
3850	5-p	Sedan	3,100	4133	7-p	Sedan Limousine	2,885	2575	5-p	Sedan	1,455
3850	7-p	Sedan	3,200	(133 in. W. B.)				ROLLS-ROYCE			
MARMON "74"				(136 in. W. B.)				Chassis			
3470	2-p	Roadster	\$3,165	4060	4-p	Runabout	3,950	Manufacturers do not quote list prices.			
3666	5-p	Phaeton	3,165	4090	5-p	Touring	3,750	STANLEY "252"			
3766	7-p	Touring	3,165	4028	4-p	Sp. Touring	3,900	3770	5-p	Phaeton	\$2,500
3861	5-p	Brougham Coupe	3,295	4242	4-p	Coupe	4,650	4075	5-p	Sedan	3,300
3981	5-p	Coupe de Luxe	3,295	4337	5-p	Coupe	4,825	STAR			
3921	5-p	Sedan de Luxe	3,775	4528	5-p	Sedan	4,750	1725	2-p	Roadster	\$540
4036	7-p	Sedan de Luxe	3,850	4535	5-p	Sedan Limousine	4,850	1830	5-p	Touring	540
4000	5-p	Sedan Limousine	3,900	(143 in. W. B.)				2090	5-p	Touring F W B	745
4100	7-p	Sedan Limousine	3,975	4199	7-p	Touring	3,950	1910	5-p	Spec. Touring	795
MAXWELL "25"				4655	7-p	Sedan	5,000	1915	2-p	Coupe	750
2130	2-p	Roadster	\$885	4710	7-p	Sedan Limousine	5,100	2155	5-p	Sedan	830
2275	2-p	Sp. Touring	975	PAIGE "21-24"				2235	5-p	Spec. Sedan	1,090
2210	5-p	Touring	895	3875	4-p	Phaeton	\$2,165	STEARNS-KNIGHT			
2410	5-p	Sp. Touring	1,055	3935	7-p	Phaeton	2,165	"B" (4)			
2255	2-p	Club Coupe	995	3975	5-p	Brougham	2,195	3775	5-p	Coupe Roadster	\$1,795
2405	4-p	Std. Coupe	1,195	4050	5-p	Broug. De Luxe	2,395	4250	5-p	Touring	1,595
2440	5-p	Club Sedan	1,045	4325	7-p	Sedan De Luxe	2,840	3750	4-p	Sedan	2,095
2580	5-p	Std. Sedan	1,095	4370	7-p	Sub. Limousine	2,965	3750	4-p	Coupe Brougham	1,895
2595	5-p	Spec. Sedan	1,245	PEERLESS "6-70"				3850	7-p	Brougham	2,095
2785	5-p	Trav. Sedan	1,535	3050	2-p	Roadster	\$2,335	4025	2-p	Coupe	3,395
MERCER "6"				3175	5-p	Touring	2,385	4275	4-p	Sp. Coupe	3,150
5-p		Runabout	\$4,500	3850	7-p	Touring	2,485	3950	5-p	Sedan	2,945
5-p		Touring	4,500	3525	5-p	Coupe	2,495	4275	7-p	Sp. Brougham	3,395
5-p		Raceabout	3,900	3550	5-p	Sedan	2,565	3625	4-p	Touring	1,875
5-p		Sporting	4,500	3725	7-p	Sedan	2,765	3640	5-p	Touring	1,875
5-p		Coupe	6,250	3825	7-p	Limousine	2,925	3550	2-p	Sport Coupe	2,185
5-p		Sport Sedan	6,250	Equipoised "8"				3650	5-p	Coupe Brougham	2,285
5-p		Tour. Limousine	6,500	3950	4-p	Phaeton	2,945	3700	5-p	Sedan	2,475
MOON Series "A"				4300	5-p	Phaeton	2,990	3700	5-p	Brougham	2,475
2440	5-p	Roadster	\$1,250	4310	5-p	Town Brougham	4,250	3850	7-p	Brough. Sedan	2,480
2460	5-p	Sp. Touring	1,195	4400	7-p	Town Sedan	3,895	STERLING-KNIGHT			
2605	5-p	Sedan 2d	1,595	4525	7-p	Sub. Sedan	3,995	3200	4-p	Sp. Touring	\$2,250
2755	5-p	Petite Sedan 4 d.	1,685	4625	7-p	Berline Lim.	4,195	3235	5-p	Phaeton	2,150
2760	5-p	Touring	1,495	4100	4-p	Victoria Coupe	3,545	3300	7-p	Touring	2,400
2920	5-p	Sedan	1,815	4150	5-p	Sub. Coupe	3,595	3200	2-p	Coupe Roadster	3,100
3090	5-p	Petite Sedan	1,915	PIERCE-ARROW "33"				3450	5-p	Sedan	2,800
Metropolitan				4350	2-p	Runabout	\$5,250	3550	7-p	Sedan	3,050
2860	5-p	Touring	1,515	4500	5-p	Touring	5,250	3450	4-p	Sp. Brougham	2,750
3190	5-p	Sedan	1,995	4730	3-p	Coupe	6,800	3800	4-p	Coupe	9,000
3270	5-p	Sp. Touring	1,995	4800	4-p	Sedan	6,900	4800	6-p	Sedan	10,000
3590	5-p	Petite Sedan	2,540	4960	7-p	Sedan	7,000	4800	6-p	Sedan	9,675
NASH "Special"				4750	4-p	Coupe Sedan	6,900	4800	6-p	Town Brougham	10,175
2870	2-p	Roadster	\$1,095	4780	6-p	Brougham	6,800	4800	6-p	Vestibule Limou.	9,675
3960	5-p	Touring	1,095	4850	7-p	Limousine	7,000	4800	7-p	Vestibule Limou.	10,175
3120	5-p	Sedan	1,235	5060	7-p	Enclosed Lim.	7,000	4800	7-p	% Limousine	10,175
"Advanced"				4780	7-p	French Lim.	7,000	STUDEBAKER			
(121 in. W. B.)				4730	6-p	Landaulet	7,000	Standard Six			
3920	3-p	Roadster	1,375	3205	2-p	Roadster	2,895	2760	3-p	Du. Roadster	\$1,125
3400	5-p	Touring	1,375	3250	4-p	Sport Tour.	3,495	2870	5-p	Du. Phaeton	1,145
3658	5-p	Sedan 2 d.	1,485	3335	7-p	Phaeton	3,395	2945	3-p	C. Club. Coupe	1,345
3680	5-p	Sedan	1,695	3385	4-p	Coupe Landau	3,320	3110	5-p	Coupe	1,445
127 in. W. B.)				3385	4-p	Coupe	3,395	2980	5-p	Coach	1,295
3480	7-p	Touring	1,525	3440	5-p	Sedan	3,395	3175	5-p	Brougham	1,465
3880	7-p	Sedan	2,390	3560	7-p	Enc. Drive Lim.	4,045	3260	5-p	Sedan	1,545
3750	5-p	Coupe 4 d.	2,190	REO "T-6"				3280	5-p	Berline	1,650
3640	4-p	Victoria	2,090	3350	2-p	Sp. Roadster	1,765	Special Six			
3420	3-p	Roadster	\$1,095	3450	4-p	Coupe	1,975	2760	3-p	Du. Roadster	\$1,125
3510	3-p	Sp. Roadster	1,195	3400	5-p	Sedan 4 d.	1,595	2870	5-p	Du. Phaeton	1,145
3485	5-p	Touring	1,095	3545	5-p	Sedan	2,085	2945	3-p	C. Club. Coupe	1,345
2550	5-p	Sp. Touring	1,195	3705	5-p	Brougham 4 d.	2,235	3110	5-p	Coupe	1,445
2620	5-p	Coach	1,215	REVERE "25"				2980	5-p	Coach	1,295
2820	3-p	Landau Coupe	1,295	3900	2-p	Roadster	\$2,750	3175	5-p	Brougham	1,465
2720	4-p	Coupe	1,495	3975	4-p	Speedster	2,750	3260	5-p	Sedan	1,545
2700	5-p	Spe. Sedan	1,375	4050	5-p	Touring	2,750	3280	5-p	Berline	1,650
2860	5-p	Sedan	1,545	4300	5-p	Sedan	3,800	Standard Six			
				3700	2-p	Roadster	3,200	2760	3-p	Du. Roadster	\$1,125

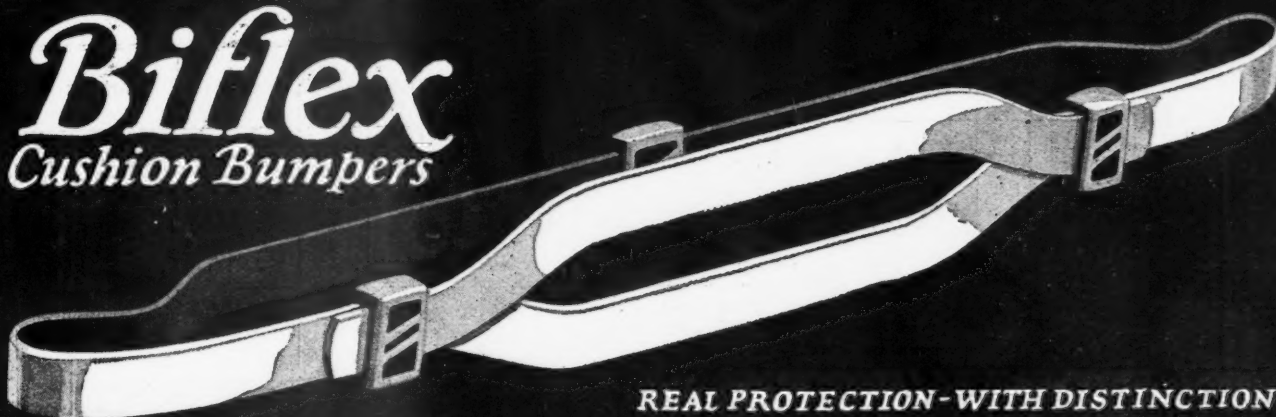
Current Passenger Car Specifications

(This list comprises cars distributed on a national basis)

MAKE AND MODEL		TIRES			Balloons	ENGINE										Electrical System		Clutch	Gear-set	Universal Joints	REAR AXLE		BRAKES		Steering Gear	Rear Springs
		Wheelbase (Ins.)	Standard Size (Ins.)	Equipment		Make	Model	Number of Cylinders, Bore and Stroke (Ins.)	Rated Horsepower, N.A.C.C.	Valve Arrangement	Piston Material	Number of Main Crankshaft Bearings	Oiling System	Carburetor Make	Ignition System Make	Generator and Starter Make	Type and Make				Make	Type and Make	Type and Make	Gear Ratio			Foot, Type and Location	Hand, Type and Location	Four-Wheel Brake, Type	Make	Type and Length
Anderson.....41	115	31x5.2	Yes	Cont	7U	6-3 1/2x4 1/2	23.44	L	C	4	PC	Zen	Wes	Wes	P-B&B	Dur	R-Uni	1/2 Sal	4.75	E-R	E-T	Mec*	Gem	S-53		
Anderson.....50	122	33x4.9	Yes	Cont	8L	6-3 1/2x4 1/2	27.31	L	C	4	PC	Zen	Rem	Rem	P-B&B	Dur	R-Uni	1/2 Sal	4.50	E-R	E-T	Mec*	Gem	S-58		
Apperson.....6	120	32x5.7	Yes	Own	6	6-3 1/2x4 1/2	24.40	L	C	4	FP	Str	Rem	Rem	P-Roc	Mec	M-Stl	1/2 Col	5.10	E-R	I-R	Mec*	Lav	J-48		
Apperson.....V-5	130	33x6.7	Yes	Own	8	8-3 1/2x5	33.80	L	C	3	PC	Sch	Rem	Bij	D-Own	P-Own	M-Thi	1/2 Own	4.66	E-R	I-R	Mec*	Own	J-48		
Apperson St-Away "8"	130	32x5.7	Yes	Own	St. "8"	8-3 1/2x4 1/2	31.25	L	C	5	PC	Sch	Rem	R. m	P-Own	Own	M-Ste	1/2 Own	4.25	E-R	I-R	Mec*	Ros	J-.....		
Auburn....."4"	108	29x4.4	Yes	Lyc	CF	4-3 1/2x5	21.03	L	A	5	PC	.....	Rem	Rem	P-B&B	W-G	M-Uni	1/2 Col	4.63	E-R	E-T	Mec*	Jac	S-57	
Auburn....."6-43"	111	31x4	Yes	Cont	7U	6-3 1/2x4 1/2	23.44	L	C	4	PC	Str	Rem	Rem	P-B&B	W-G	M-Uni	1/2 Col	.....	E-R	E-T	Mec*	Ros	S-57	
Auburn....."8-63"	129	32x6.2	Yes	Lyc	2-H	8-3 1/2x4 1/2	31.25	L	C	5	PC	Sch	Rem	Rem	P-Own	Own	M-Uni	1/2 Col	.....	E-R	E-T	Mec*	Ros	S-57	
Barley....."6-50"	118	33x4	No	Cont	7U	6-3 1/2x4 1/2	23.44	L	C	4	PC	Str	Del	Del	P-B&B	Ful	R-M&F	3/4 Col	4.90	E-R	I-R	None	Jac	S-56		
Buick....."Standard"	114 1/2	31x4.9	Yes	Own	Sta	6-3 1/2x4 1/2	21.60	L	C	4	PC	Mar	Del	Del	D-Own	Own	M-Own	3/4 Own	4.90	E-F	I-R	Mec	Jac	V-48		
Buick....."Master"	120	32x5.7	Yes	Own	Mast	6-3 1/2x4 1/2	27.34	L	C	4	PC	Mar	Del	Del	D-Own	Own	M-Own	F-Own	4.73	E-F	I-R	Mec	Jac	V-47 1/2		
Cadillac.....V-63	132	33x5	Yes*	Own	63	8-3 1/2x5 1/2	31.25	L	C	3	PC	Own	Del	Del	D-Own	Own	M-Spi	F-Own	4.51	E-F	I-R	Mec	Own	N-54		
Case.....X	122	32x4 1/2	Yes*	Cont	8R	6-3 1/2x4 1/2	27.34	L	C	4	PC	Ray	Del	Del	D-Own	Own	R-Sne	1/2 Col	4.90	E-R	I-R	Hyd	Jac	S-59 1/2		
Case.....JIC	122	32x4 1/2	Yes*	Cont	8R	6-3 1/2x4 1/2	27.31	L	C	4	PC	Sch	Del	Del	D-Own	Own	R-Sne	1/2 Col	4.90	E-R	I-R	Hyd	Lav	S-55		
Case.....Y	132	33x5	Yes*	Cont	6T	6-3 1/2x5 1/2	31.54	L	C	4	PC	Sch	Del	Del	D-Own	Own	R-Sne	3/4 Col	4.45	E-R	I-R	Hyd	Jac	S-57		
Chandler.....S	123	33x6.0	Yes*	Own	SS	6-3 1/2x5	29.40	L	C	4	PC	Sch	Bos	Bos	P-B&B	Own	R-Own	3/4 Own	4.45	E-F	E-T	Mec	Own	S-58 1/2		
Chevrolet....."K"	103	30x3 1/2	Yes*	Own	"K"	4-3 1/2x4	21.76	L	C	3	PS	(Zen Car)	Rem	Rem	P-Own	Own	M-Own	1/2 Own	3.82	E-R	I-R	None	Own	S-54		
Chrysler.....Six	112 1/2	30x5.7	Yes	Own	Six	6-3 1/2x4 1/2	21.60	L	A	7	PC	Bal	Rem	Rem	D-Own	Own	M-Uni	1/2 Own	4.60	E-F	E-T	Hyd	Jac	S-51 1/2		
Cleveland....."31"	108 1/2	30x4.7	Yes	Own	"31"	6-2 1/2x4 1/2	19.84	L	C	3	PC	Joh	Bos	Bos	P-B&B	Own	R-Pic	1/2 Own	4.90	E-R	E-T	Mec*	CAS	S-50		
Cleveland....."43"	115	31x5.2	Yes	Own	43	6-3 1/2x4 1/2	23.44	L	C	3	PC	Sch	Bos	Bos	P-B&B	Own	R-Sne	1/2 Own	4.90	E-R	E-T	Mec*	CAS	S-53		
Cole.....Master	127	31x7.3	Yes	Nort	311	8-3 1/2x4 1/2	39.20	L	A	3	PC	Joh	Del	Del	D-Nor	Nor	M-Spi	F-Col	4.70	E-R	I-R	None	Gem	S-57		
Cunningham.....V6	132	33x5	Yes*	Own	V6	8-3 1/2x5	45.00	L	C	3	FP	Str	Del	Del	D-Own	Own	R-Sne	F-Tim	4.23	E-R	I-R	None	Gem	J-62		
Dagmar....."6-60"	118	32x4 1/2	Yes*	Cont	8R	6-3 1/2x4 1/2	27.34	L	C	4	PC	Sch	Del	Del	P-B&B	War	M-Spi	1/2 Tim	5.10	E-R	E-T	None	Gem	S-52		
Dagmar....."6-70"	138	33x5	Yes*	Cont	6J	6-3 1/2x5	33.75	L	C	4	PC	Sch	Del	Del	D-B-L	B-L	M-Spi	1/2 Tim	4.90	E-R	I-R	None	Gem	S-52		
Daniels....."24-38"	138	33x5	Yes*	Own	24-38	8-3 1/2x5 1/2	39.20	L	C	3	PC	Zen	Del	Del	P-Own	Own	M-Spi	F-Tim	4.23	E-R	I-R	None	Ros	S-52		
Davis....."90"	115	31x5.2	Yes	Cont	7U	6-3 1/2x4 1/2	23.44	L	C	4	PC	Str	Del	Del	P-B&B	W-G	M-Pet	1/2 Tim	5.10	E-F	I-R	Hyd	Ros	S-52		
Davis....."91"	118	30x5.7	Yes	Cont	8L	6-3 1/2x4 1/2	27.34	L	C	4	PC	Str	Del	Del	P-B&B	W-G	M-Pet	1/2 Tim	5.10	E-F	I-R	Hyd	Ros	S-52		
Dodge Brothers....."25"	116	30x5.7	Yes	Own	25	4-3 1/2x4 1/2	24.03	L	A	3	Sp	Ste	N.E	N.E	D-Own	Own	M-Own	1/2 Own	4.51	E-R	I-R	None	Own	S-55		
Dorris....."6-80"	132	32x6.2	Yes	Own	6-80	6-4 1/2x5	38.40	L	C	7	FP	Str	Bos	Bos	D-Own	War	R-Spi	1/2 Tim	4.23	E-R	I-R	None	Ros	S-60		
Duesenberg Straight "8"	131	33x5	Yes	Own	"A"	8-2 1/2x5	26.45	L	C	3	PC	Str	Del	Del	D-Own	Own	R-Own	1/2 Own	4.90	I-F	E-T	Hyd	Ros	S-59		
Dupont....."D"	141	32x6.2	Yes	Wis	Y	6-3 1/2x5	27.34	L	C	3	PC	Sch	Bos	Bos	D-Own	Cpl	M-Uni	1/2 Eat	4.70	E-F	I-T	Hyd	Jac	S-59		
Durant....."A-22"	109	31x4	Yes*	Cont	Spec	4-3 1/2x4 1/2	24.03	L	A	3	PC	Til	A-L	A-L	P-Own	War	M-Spi	1/2 Own	4.33	E-R	I-R	Mec*	Own	S-50 1/2		
Elcar....."4-41"	112	31x4	Yes*	Lyc	CF	4-3 1/2x5	21.03	L	A	5	PC	Zen	A-L	A-L	P-B&B	W-G	M-Mec	1/2 Sal	4.70	E-R	E-T	Mec*	Ros	S-51		
Elcar....."6-51"	113	31x4	Yes*	Lyc	7U	6-3 1/2x4 1/2	23.44	L	C	4	PC	Str	A-L	A-L	P-B&B	W-G	M-Mec	1/2 Sal	4.70	E-R	E-T	Mec*	Ros	E-51		
Elcar....."8-80"	127	32x6.2	Yes	Lyc	H	8-3 1/2x4 1/2	31.25	L	C	5	PC	Sch	Del	Del	P-B&B	W-G	M-Mec	1/2 Sal	4.71	E-F	E-T	Hyd	Ros	S-58		
Essex....."6"	110 1/2	31x5.2	Yes	Own	6	6-2 1/2x4 1/2	17.32	L	A	3	Sp	Ste	Bos	Bos	D-Own	Own	M-Spi	3/4 Own	5.60	E-R	I-R	None	Own	S-54 1/2		
Flint....."40"	115	30x5.2	Yes	Cont	6-W	6-3 1/2x4 1/2	23.44	L	C	4	PC	Car	A-L	A-L	P-Own	War	M-Spi	3/4 Ad	4.77	E-F	E-T	Hyd	Ros	S-50		
Flint....."55"	120	32x6.2	Yes	Cont	55	6-3 1/2x5	27.34	L	C	7	PC	Str	Del	Del	P-Own	War	M-Spi	3/4 Ad	4.77	E-F	E-T	Hyd	Ros	S-55		
Ford....."T"	100	30x3 1/2	Yes*	Own	T	4-3 1/2x4	22.50	L	C	3	Sp	(Own Kin)	Own	Own	D-Own	Own	M-Own	1/2 Own	3.63	E-T	I-R	None	Own	O-43 1/2		
Franklin....."11 A"	110	31x5.2	Yes	Own	11-A	6-3 1/2x4	25.35	L	A	7	PC	Str	Dyn	Dyn	P-B-L	Own	M-Spi	1/2 Own	4.73	E-T	E-R	None	Own	E-38		
Gardner.....Series 5	112	31x5.2	Yes	Lyc	CE	4-3 1/2x5	21.73	L	C	5	PC	Zen	Wes	Wes	P-B&B	Mec	M-Pet	3/4 Fli	4.80	I-R	I-R	None	Dit	S-38		
Gardner....."6"	118	30x5.2	Yes	Own	"6"	6-3 1/2x4 1/2	23.44	L	C	4	FP	Sch	Rem	Rem	D-B&B	Mec	M-Pet	1/2 Tim	4.90	E-R	E-T	None	Own	S-58		
Gardner....."8"	125	30x5.7	Yes	Lyc	H	8-3 1/2x4 1/2	28.80	L	C	5	PS	Sch	Rem	Rem	P-B&B	Mec	M-Mec	1/2 Col	4.70	I-F	E-T	Mec	Gem	S-53		
Gray....."O"	101	30x3 1/2	Yes*	Own	R	4-3 1/2x4	21.03	L	C	3	Sp	Sec	Wes	Wes	P-Own	Det	R-Sne	1/2 Tim	3.99	I-F	E-T	None	Gem	Q-30		
H.C.S.....Series 6	126	33x5	Yes*	Own	6	6-3 1/2x5	29.40	L	C	3	FP	Str	Del	Del	D-B-L	B-L	M-Spi	1/2 Own	4.63	I-R	I-R	None	Gem	S-56		
Haynes....."60"	121	33x5.7	Yes	Own	60	6-3 1/2x4 1/2	29.40	L	C	3	PS	Ray	Kin	L-N	D-War	Mec	M-Uni	1/2 Own	4.41	E-R	E-T	None	Ros	S-54 1/2		
Hertz....."D-1"	114	31x4	Yes	Cont	7U	6-3 1/2x4 1/2	23.44	L	C	3	PS	Zen	Del	Del	D-Lon	Own	M-Spi	1/2 Tim	4.72	E-R	E-T	None	Ros	S-56		
Hudson.....Super 6	127 1/2	33x6.2	Yes	Own	6	6-3 1/2x5	29.40	L	A	4	Sp	Det	Bos	Bos	D-Own	Own	M-Spi	1/2 Own	4.45	E-R	I-R	None	Gem	S-57 1/2		
Hupmobile.....Series R	115	31x5.2	Yes	Own	R	4-3 1/2x5 1/2	10.90	L	C	3	PC	Str	Wes	Wes	P-Lon	Own	M-Uni	1/2 Own	4.90	E-R	I-R	None	Ros	S-56 1/2		
Hupmobile....."E-1"	118 1/2	33x6.0	Yes	Own	E	8-2 1/2x4 1/2	26.48	L	C	5	PC	Str</														

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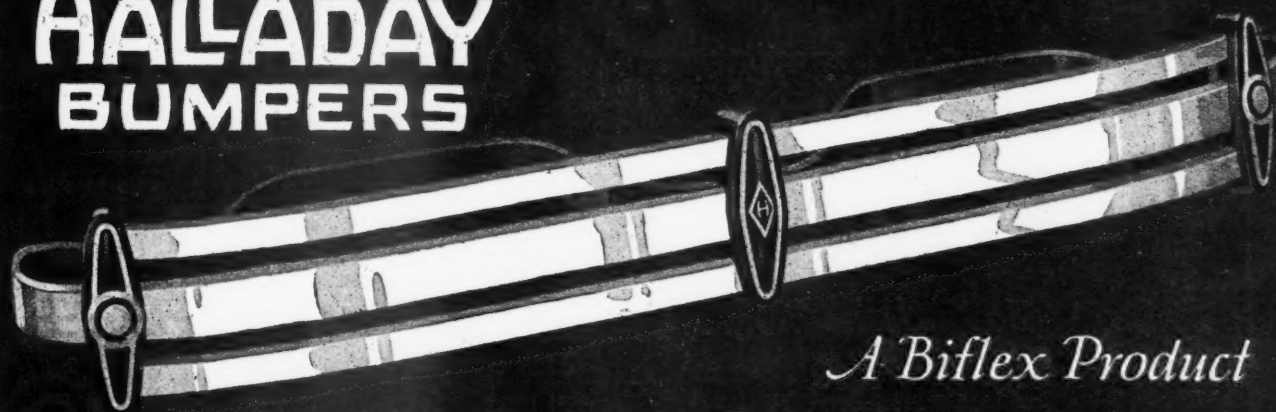
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MAKE AND MODEL	Wheelbase (Ins.)	TIRES		Balloon Equipment	ENGINE										Electrical System		Clutch	Gear-set	Universal Joints	REAR AXLE		BRAKES			Steering Gear	Rear Springs
		Standard Size (Ins.)			Make	Model	Number of Cylinders, Bore and Stroke (Ins.)	Rated Horsepower, N.A.C.C.	Valve Arrangement	Piston Material	Number of Main Crankshaft Bearings	Oiling System	Carburetor Make	Ignition System Make	Generator and Starter Make	Type and Make				Make	Type and Make	Type and Make	Gear Ratio	Foot, Type and Location			Hand, Type and Location	Four-Wheel Brake, Type	Make	Type and Length
Paige Peerless.....70	131	33x6.7	Yes	Cont	10A	6-3 1/2 x 5	33.75	L	C	4	PC	Ray	A-K	Rem	D-Lon	W-G	M-Mec	1/2 Tim	4.90	E-R	E-T	Hyd*	Gem	S-61 1/2		
Peerless.....133	126	33x6.2	Yes	Own	70	6-3 1/2 x 5	29.40	L	C	7	PC	Joh	Del	Del	D-Own	Own	M-Spi	3/4 Tim	4.63	E-F	I-R	Hyd	Gem	S-54		
Peerless Equipped "8"	123	33x6.6	Yes	Own	67	8-3 1/4 x 5	33.80	L	C	3	PC	Str	Del	Del	D-Own	Own	M-Spi	3/4 Tim	4.90	E-R	I-R	Hyd	Gem	S-56		
Pierce-Arrow.....33	138	33x5	No	Own	33	6-4 x 5 1/2	38.40	T	C	7	FP	Own	Del	Del	D-Own	Own	M-Spi	1/2 Own	4.29	E-R	I-R	Mec*	Own	S-64 1/2		
Pierce-Arrow....."80"	130	32x5.7	Yes	Own	"80"	6-3 1/2 x 5	29.40	L	C	7	FP	Own	Del	Del	P-B&B	B-L	M-Spi	1/2 Tim	4.45	I-F	I-R	Mec	Gem	S-58 1/2		
Reo.....T6	120	32x6.2	Yes	Own	T6	6-3 1/2 x 5	24.34	G	A	4	PS	Sch	NE	NE	D-Own	Own	M-Own	1/4 Own	4.70	E-R	I-R	None	Own	S-64 1/2		
Revere....."M"	131	32x4 1/2	Yes*	Mons.	"M"	4-4 1/2 x 6	30.63	H	A	2	PC	Str	Bos	Wes	D-B-L	B-L	M-Spi	1/4 Own	3.44	I-R	E-R	.....	Gem	S-56 1/2	
Revere.....25	131	32x6.2	Yes*	Own	6-J	6-3 1/2 x 5	33.75	H	C	4	PC	Sch	Bos	Wes	D-Ful	Ful	M-Spi	3/4 Col	3.75	I-F	E-T	Mec	Gem	S-56 1/2		
Rickenbacker.....D	117	31x5.2	Yes*	Own	D	6-3 1/4 x 4 1/2	25.35	L	C	7	PC	Str	Bos	Bos	D-Own	W-G	M-Mec	3/4 Col	4.63	I-F	E-T	Mec	Gem	S-57		
Rickenbacker.....A	121 1/2	32x5.7	Yes	Own	A	8-3 x 4 1/2	28.60	L	C	9	PC	Zen	Del	Bos	D-Own	W-G	M-Mec	1/2 Own	5.10	I-F	E-T	Mec	Gem	S-59		
Roamer.....6-54-E	118	32x4 1/2	No	Cont	12XD	6-3 1/2 x 5 1/2	29.40	L	A	3	PS	Str	Spl	Wes	P-B&B	Ful	R-M&E	3/4 Tim	4.45	E-R	I-R	Mec*	Jac	V-55 1/2		
Roamer.....4-75-E	128	32x4 1/2	No	Dues	G1	4-4 1/4 x 6	28.90	H	A	3	FP	Str	Bos	Wes	D-B-L	B-L	R-M&E	3/4 Tim	4.63	F-R	I-R	Mec*	Jac	V-55 1/2		
Rollin.....G-2	112	31x5.2	Yes	Own	G	4-3 1/4 x 4 1/2	16.90	L	A	4	PC	Til	Con	Dyn	P-B&B	Mun	R-Own	1/2 Sal	5.10	I-F	I-F	Mec	Ros	O-46		
Rolls-Royce.....40-50	143 1/2	33x5	No	Own	40	6-4 1/2 x 4 1/2	48.60	L	A	7	FP	Own	Bos	Wes	K-Own	Own	M-Own	F Own	3.72	I-R	I-R	None	Own	S-64 1/2		
Stanley.....252	122	31x4.9	Yes	Own	252	2-4 x 5	13.09	X	C	2	Sp	Non	Non	Bos	Non	Non	R-The	1/4 Own	4.50	E-F	I-R	Hyd	Ros	S-58		
Star.....4	102	30x3 1/2	Yes*	Cont	Spec	4-3 1/2 x 4 1/2	15.63	L	C	3	PK	Til	A-L	A-L	P-Own	Own	M-Spi	3/4 Own	4.87	E-R	I-R	Mec*	Own	S-49 1/2		
Stearns Knight.....C	121	33x6	Yes	Own	Kni	6-3 1/2 x 5	25.35	X	A	4	PC	Joh	DeJ	DeJ	D-M&E	Own	R-Cl	1/2 Eat	5.30	E-R	I-R	Hyd*	Own	V-50		
Stearns Knight.....B	119	33x4 1/2	Yes*	Own	Kni	4-3 1/2 x 5 1/2	22.50	X	A	3	PC	Sch	A-K	A-L	D-Own	Own	R-Cl	1/2 Own	4.50	E-R	I-R	Hyd*	Own	V-50		
Stearns Knight.....S	130	33x6.6	Yes	Own	Kni	6-3 1/2 x 5	29.40	X	A	4	PC	Joh	DeJ	DeJ	D-M&E	Own	R-Cl	1/2 Own	4.90	E-R	I-R	Hyd	Ros	V-50		
Sterling Knight.....G	125	32x4 1/2	Yes*	Own	Kni	6-3 1/4 x 4 1/2	25.35	X	C	7	FP	Str	Wes	Wes	D-Ful	Ful	R-Cl	1/2 Tim	5.10	E-R	I-R	H	Ros	S-58		
Stevens-Duryea.....G	138	33x5	Yes*	Own	G	6-4 1/2 x 5 1/2	47.25	L	C	4	PS	Str	Bos	Bos	D-B-L	B-L	M-Spi	F Tim	3.76	E-R	I-R	None	Own	J-59 1/2		
Studebaker.....Sta. Six	113	31x5.2	Yes	Own	ER	6-3 1/2 x 4 1/2	27.34	L	C	4	PC	Str	(Wag Rem)	(Wag Rem)	P-Own	Own	R-The	1/2 Own	4.18	E-R	E-T	Hyd*	Own	S-50 1/2		
Studebaker.....Spec. Six	120	32x6.2	Yes	Own	EQ	6-3 1/2 x 5	29.40	L	C	4	PC	Str	(Wag Rem)	(Wag Rem)	P-Own	Own	M-Spi	1/2 Own	4.36	E-R	E-T	Hyd*	Own	S-56		
Studebaker.....Big Six	127	34x7.3	Yes	Own	EP	6-3 1/2 x 5	36.04	L	C	4	PC	Bal	(Wag Rem)	(Wag Rem)	P-Own	Own	M-Spi	1/2 Own	3.69	E-R	E-T	Hyd*	Own	S-56		
Stutz.....693-4	120	32x6.2	Yes	Own	691	6-3 1/2 x 5	29.40	I	C	3	PC	Str	Rem	Rem	P-B&B	W-G	M-Mec	3/4 Tim	4.90	E-R	I-R	None	Gem	S-62		
Stutz.....695	130	32x6.7	Yes	Own	691	6-3 1/2 x 5	29.40	I	C	3	PC	Str	Rem	Rem	P-B&B	W-G	M-Mec	3/4 Tim	4.90	E-R	I-R	Hyd*	Gem	S-62		
Templar.....122	122	33x4	No	Own	.....	6-3 1/2 x 5	27.34	L	C	4	PS	Til	Dyn	Dyn	P-M&E	W-G	R-Sne	3/4 Sal	5.10	I-F	E-T	Mec	Ros	S-54	
Valie.....60	118	31x5.2	Yes	Own	50	6-3 1/2 x 4 1/2	24.38	L	C	4	FP	Str	Dyn	Wes	P-B&B	Mun	M-Uni	1/2 Own	5.10	E-F	E-T	Hyd	Ros	S-55		
Westcott.....44	120	32x6.2	Yes	Cont	8R	6-3 1/2 x 4 1/2	27.34	L	C	4	PC	Str	Del	Del	P-B&B	W-G	M-Cle	1/4 Col	4.90	E-R	E-T	Hyd*	Gem	S-57 1/2		
Westcott.....60	118	32x6.2	Yes	Cont	8R	6-3 1/2 x 4 1/2	27.34	L	C	4	PC	Str	Del	Del	P-M&E	W-G	M-Cle	1/4 Col	4.63	E-R	E-T	Hyd*	Gem	S-56		
Wills Ste. Claire. ABC68	121	32x6.2	Yes	Own	ABC	8-3 1/2 x 4	33.80	I	C	3	FP	(Zen Sch)	Del	Del	P-Own	Own	M-Spi	1/2 Eat	4.90	(E-R)	(I-R)	(None)	Own	(S-54 1/2)		
Wills Ste. Claire. "W-6"	128	33x6.0	Yes	Own	"W-6"	6-3 1/2 x 5 1/2	25.35	I	C	7	PC	Zen	Del	Del	P-Own	Own	M-Spi	3/4 Eat	4.90	E-F	E-T	Hyd	Own	S-58		
Willys Knight.....65 & 67	118	33x1.9	Yes	Own	65	4-3 1/2 x 4 1/2	21.03	X	C	3	PS	Til	A-L	A-L	D-Own	Own	R-Own	3/4 Own	4.44	E-R	I-R	None	Own	S-55		
Willys Knight....."66"	126	32x6.2	Yes	Own	"66"	6-3 1/2 x 4 1/2	25.35	X	A	7	PC	Til	A-L	A-L	D-Own	Own	M-Mec	1/4 Own	5.11	B-F	E-R	Mec	Own	S-57 1/2		
TAXICABS																										
Checker.....117	117	33x4 1/2	No	Buda	WTU	4-3 3/4 x 5 1/2	22.50	L	C	3	PC	Zen	Sci	Wes	D-Ful	Ful	Blo	3/4 Col	4.87	E-R	I-R	None	Jon	S-57 1/2		
Driggs.....108 1/2	108 1/2	30x3 1/2	No	Own	.....	4-2 3/4 x 4 1/2	11.03	L	C	.....	PS	Zen	Bos	Bos	D-Ful	Ful	Spi	3/4 Own	4.73	E-R	I-R	None	Own	S-
Elcar.....4	112	31x4	Yes*	Lycor	CF	4-3 3/8 x 5	21.03	L	A	5	PC	Zen	A-L	A-L	P-B&B	W-G	M-Mec	1/2 Sal	4.75	E-R	E-T	Mec*	Ros	S-51		
H.C.S.....110	110	29x4 1/2	No	Wauk	Z	4-3 1/4 x 4 1/2	16.90	L	I	3	FP	Zen	Bos	Bos	P-B&B	.....	M-Mec	3/4 Own	.....	I-R	E-T	.....	Ros	S-
Kelsey Luxor....."Lux"	112	32x4	No	Lycor	CH	4-3 1/2 x 5	19.60	L	A	5	PC	Zen	Bos	Bos	P-B&B	W-M	M-Spi	3/4 Sal	5.10	E-R	I-R	None	Lav	S-55		
Luxor.....118	118	33x4 1/2	No	Buda	WTU	4-3 3/4 x 4 1/2	22.50	L	.....	.....	.....	Zen	Bos	Bos	D-B-F	Ful	M-Spi	1/2 Col	.....	E-R	E-T	None	None	S-56 1/2
Pennant Premier.....4-B	115	33x4 1/2	No	Buda	WTU	1-3 3/4 x 5 1/2	22.50	L	B	3	PC	Zen	Bos	Bos	D-Ful	Ful	Blo	3/4 Col	4.87	E-R	I-R	None	Jon	S-57		
Pennant Premier.....4-B	112	30x5	Yes*	Buda	WTU	1-3 3/4 x 5 1/2	22.50	L	B	3	PC	Zen	Bos	Bos	P-B&B	Mun	Pic	3/4 Col	4.70	E-F	E-T	Mec	Ros	S-57 1/2		
Rauch & Lang.....T	112	32x4	No	Buda	WTU	1-3 3/4 x 5 1/2	22.50	L	C	3	Sp	Zen	Bos	Dyn†	D-Dtl	Det	Spi	1/2 Sta	5.10	E-R	E-T	None	Gem	S-50 1/2		
Rauch & Lang.....T	102	33x4 1/2	No	Own	.....	Electric	.....	.....	.....	.....	.....	.....	.....	.....	None	None	Own	.....	8.40	.....	.....	None	None	S-
Reo.....113	113	32x4 1/2	Yes*	Own	T-6	6-3 1/2 x 5	24.30	G	A	4	PS	Sch	N-E	N-E	D-Own	Own	Own	1/2 Own	4.70	E-R	I-R	None	Own	S-54		
Traveler.....108 1/2	108 1/2	32x4	No	Buda	WTU	4-3 3/4 x 5 1/2	22.50	L	B	3	PC	Zen	Eis	Eis	D-Dtl	W-M	Spi	Col	.....	E-R	I-R	None	Gem	S-	
Willys Knight.....A.B.C.	118	32x4 1/2	Yes*	Own	64	4-3 3/4 x 4 1/2	21.03	X	C	3	PS	Til	A-L	A-L	D-Own	Own	Own	3/4 Own	5.12	E-R	I-R	None	Own	S-55		
Yellow.....O-4	109	32x4 1/2	No	Cont	V7	4-3 3/4 x 5	22.50	L	C	3	PS	Zen	Bos	Bos	D-B-L	B-L	Spi	3/4 Tim	4.90	E-R	E-T	None	Gem	S-56		
Yellow.....A-2	109	29x4 1/2	Yes	Cont	V7	4-3 3/4 x 5	22.50	L	C	3	Sp	Zen	Bos	Bos	D-B-L	B-L	Spi	3/4 Tim	4.90	E-R	E-T	None	Gem	S-56		

TAXICABS

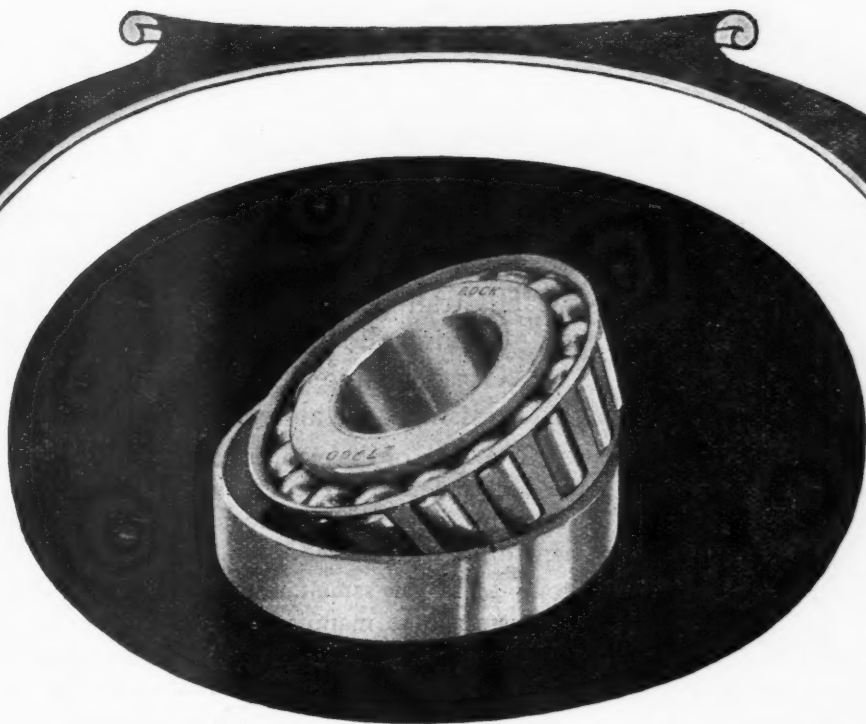
Checker.....	117	33x4½	No	Buda	WTU	4-3½x5½	22.50	L	C	3	PC	Zen	Sci	Wes	D-Ful	Ful	Blo	¾ Col	4.87	E-R	I-R	None	Jon	S-57½	
Driggs.....	108½	30x3½	No	Own	.....	4-2½x4½	11.03	L	C	.....	PS	Zen	Bos	Bos	D-Ful	Ful	Spi	¾ Own	4.74	E-R	I-R	None	Own	S-
Elcar.....	112	31x4	Yes*	Lycor	CF	4-3½x5	21.03	L	A	5	PC	Zen	A-L	A-L	P-B&B	W-G	M-Mec	½ Sal	4.75	E-R	E-T	Mec*	Ros	S-51	
H.C.S.....	110	29x4½	No	Wauk	Z	4-3¼x4½	16.90	L	I	3	FP	Zen	Bos	Bos	P-B&B	M-Mec	¾ Own	I-R	E-T	Ros	S-
Kelsey.....E	112	32x4	No	Lycor	CH	4-x3½	5	19.60	L	A	5	PC	Zen	Bos	Bos	P-B&B	W-M	M-Spi	¾ Sal	5.10	E-R	I-R	None	Lav	S-55
Luxor....."Lux"	118	33x4½	No	Buda	WTU	4-3½x5½	22.50	Zen	Bos	Bos	D-Ful	Ful	M-Spi	½ Col	E-R	E-T	None	Gem	S-56½
Pennant.....	115	33x4½	No	Buda	WTU	1-3½x5½	22.50	L	B	3	PC	Zen	Bos	Bos	D-Ful	Ful	Blo	¾ Col	4.87	E-R	I-R	None	Jon	S-57	
Premier.....4-B	112	30x5	Yes*	Buda	WTU	1-3½x5½	22.50	L	B	3	PC	Zen	Bos	Bos	P-B&B	Mun	Pic	¾ Col	4.70	E-F	E-T	Mec	Jon	S-57½	
Rauch & Lang.....T	112	32x4	No	Buda	WTU	4-3½x5½	22.50	L	C	3	Sp	Zen	Bos	Dyn†	D-Dtl	Det	Spi	½ Sta	5.10	E-R	E-T	None	Gem	S-50½	
Rauch & Lang**	102	33x4½	No	Own	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	None	None	None	Own	8.40	.....	.....	None	Own	S-
Reo.....	113	32x4½	Yes*	Own	T-6	6-3½x5	24.30	G	A	4	PS	Sch	N-E	N-E	D-Own	None	Own	½ Own	4.70	E-R	I-R	None	Own	S-54	
Traveler.....	108½	32x4	No	Buda	WTU	4-3½x5½	22.50	L	B	3	PC	Zen	Eis	Eis	D-Dtl	W-M	Spi	Col	E-R	I-R	None	Gem	S-
Willys Knight.....A.B.C.	118	32x4½	Yes*	Own	64	4-3½x4½	21.03	X	C	3	PS	Til	A-L	A-L	D-Own	Own	Own	¾ Own	5.12	E-R	I-R	None	Own	S-55	
Yellow.....O-4	109	32x4½	No	Cont	V7	4-3½x5	22.50	L	C	3	Sp	Zen	Bos	N-E†	D-B-L	B-L	Spi	¾ Tim	4.90	E-R	E-T	None	Gem	S-56	
Yellow.....A-2	109	29x4½	Yes	Cont	V7	4-3½x5	22.50	L	C	3	Sp	Zen	Bos	N-E†	D-B-L	B-L	Spi	¾ Tim	4.90	E-R	E-T	None	Gem	S-56	

ABBREVIATIONS—

*—Electric
 †Generator only
 *—At extra cost
 †—On Phaeton models
 A—Aluminum
 Anst—Ansted
 Ad—Adams
 A-K—Atwater-Kent
 A-L—Auto-Lite
 B—Semi Steel
 Bal—Ball & Ball
 B & B—Borg & Beck
 B-F—Both Internal and External Four Wheels
 Bij—Bijur
 B-L—Brown-Lipe
 Blo—Blood
 Bos—Bosch
 C—Cast Iron
 Car—Carter
 CH—Climax
 Col—Columbia
 Con—Connecticut
 Cont—Continental
 Cpl—Campbell
 D—Multiple Disc

Del—Delco
 Det—Detroit
 De J—De Jon
 Dit—Ditwiler
 Doo—Dooley
 Dtl—Detlaiff
 Dues—Duesenberg
 Dur—Durstun
 Dyn—Dyneto
 E—Full Elliptic
 E-F—External Four Wheels
 E-R—External Rear Wheels
 E-T—External Transmission
 Eat—Eaton
 F—Full Floating
 Fall—Falls
 Fil—Flint
 FP—Full Pressure to all bearings including wrist pins
 Ful—Fuller
 1/2 F—Semi-Floating
 3/4 F—Three-Quarter Floating
 G—Head and Side
 G-D—Gray & Davis
 Gem—Gemmer
 G-L—Grant-Les
 Goo—Goodrich
 H—Horizontal
 Har—Hart
 Hol—Holley
 Hoo—Hoosier
 H-Sp—Herschell-Spillman
 Hyd—Hydraulic
 I—In Head
 I-F—Internal Four Wheels
 I-R—Internal Rear Wheels
 J—Three-Quarter Elliptic
 Jac—Jacox
 Jax—Jaxon
 Joh—Johnson
 Jon—Jones
 K—Cone
 Kin—Kingston
 L—L Head
 Lav—Lavine
 Lon—Long
 L-N—Leece-Neville
 Lyco—Lycorning
 Mar—Marvel
 M—Metal
 M & E—Merchant & Evans
 Mec—Mechanics
 Mons—Monson
 Mun—Muncie

N—Platform
 Non—None
 N. E.—North East
 Nor—Northway
 O—Special Type
 Opt—Optional
 P—Single Plate
 PC—Pressure to all Crankshaft and connecting rod bearings
 Pen—Penfield
 Pet—Peters
 Pic—Pick
 PK—Pressure to Crankshaft, Connecting Rods, and Camshaft Bearings
 PS—Splash and Pressure
 Q—Quarter Elliptic
 R—Fabric
 Ray—Rayfield
 Rem—Remy
 Roe—Rockford
 Ros—Ross
 S—Semi Elliptic
 Sal—Salisbury
 Sch—Schebler
 Sci—Scintilla
 Sco—Scoe
 Sne—Snead
 Sp—Circulating Splash
 Spe—Special
 Spi—Spicer
 Spl—Splittorf
 S. E.—Standard Equipment
 Sta—Standard
 Ste—Stewart
 Stil—Sterling
 Str—Stromberg
 T—T Head
 The—Thermoid
 Thi—Thiener
 Til—Tillotson
 Tim—Timken
 Uni—Universal
 Uds—Universal Drive Shaft
 V—Cantilever
 W-G—Warner Gear
 W-M—Willys-Morrow
 Wag—Wagner
 War—Warner
 Weld—Weldley
 Wes—Westinghouse
 Wis—Wisconsin
 X—Sleeve
 Zen—Zenith



Let's Raise the "Anti"—

YOU can't imagine an automobile without anti-friction bearings. They all have them, ten or more, at vital moving points throughout the car where friction must be overcome.

To use Bock Bearings is to raise the "anti". That's the story in a nutshell. The round-head rollers, exclusive to the Bock design, ground true to .0001 of an inch, eliminate friction more effectively than any other roller can possibly do. That means freedom from wear, and long life.

Bock Quality makes a better car.

THE BOCK BEARING COMPANY
TOLEDO, OHIO

BOCK

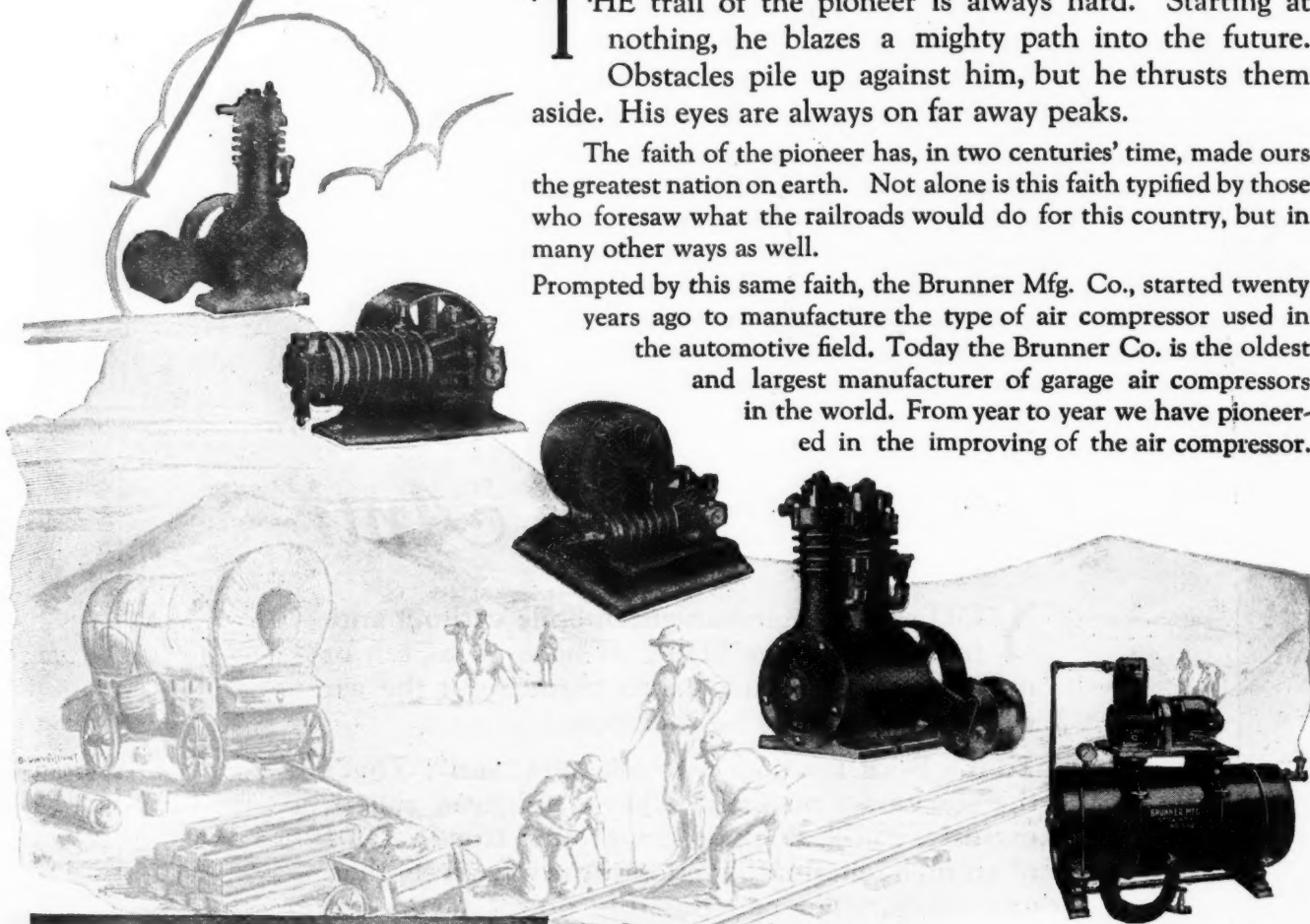
Quality TAPER ROLLER
BEARINGS

The Trail of

THE trail of the pioneer is always hard. Starting at nothing, he blazes a mighty path into the future. Obstacles pile up against him, but he thrusts them aside. His eyes are always on far away peaks.

The faith of the pioneer has, in two centuries' time, made ours the greatest nation on earth. Not alone is this faith typified by those who foresaw what the railroads would do for this country, but in many other ways as well.

Prompted by this same faith, the Brunner Mfg. Co., started twenty years ago to manufacture the type of air compressor used in the automotive field. Today the Brunner Co. is the oldest and largest manufacturer of garage air compressors in the world. From year to year we have pioneered in the improving of the air compressor.



The Brunner Engine Cleaner in Operation.



The Brunner Air Compressor will do other things besides inflate tires. The Brunner No. 78 Engine Cleaner (shown at left) will double the profit on many a service operation in your garage. As an example — To lubricate springs and stop body squeaks, the Brunner Engine Cleaner will force the lubricant into the most inaccessible places in a fraction of the time required by any other method. Write us and we will show you innumerable ways in which you can use the Engine Cleaner to put extra profits into your pocket.

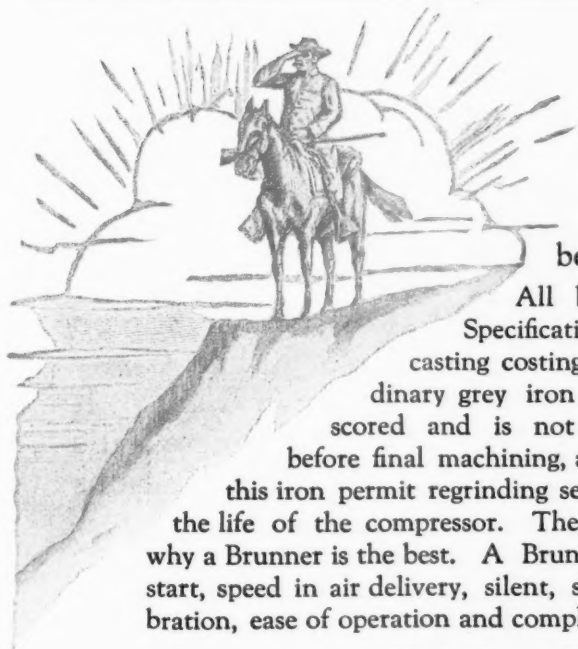
BRUNNER MANUFACTURING
CINCINNATI, OHIO KANSAS CITY, MISSOURI

BRUNN

the Pioneer



3



Brunner Air Compressors are made of the very finest materials. You can buy cheaper air compressors, but not better ones.

All bearing metals are of S. A. E. Specifications. A special alloy fine grey iron casting costing more than twice the price of ordinary grey iron is used. This iron is not easily scored and is not porous. All cylinders are aged before final machining, and the slow wearing qualities of this iron permit regrinding several times, thus adding greatly to the life of the compressor. These are just a few of the reasons why a Brunner is the best. A Brunner means low cost, a quick sure start, speed in air delivery, silent, smooth running, practically no vibration, ease of operation and complete safety.

A Brunner is a solid locked assembly—rigid, unswaying, self-contained in which contact surfaces are ground to exact fits so that vibration, rattles and leaks cannot develop.

BRUNNER MODEL ASSEMBLED UNIT 965

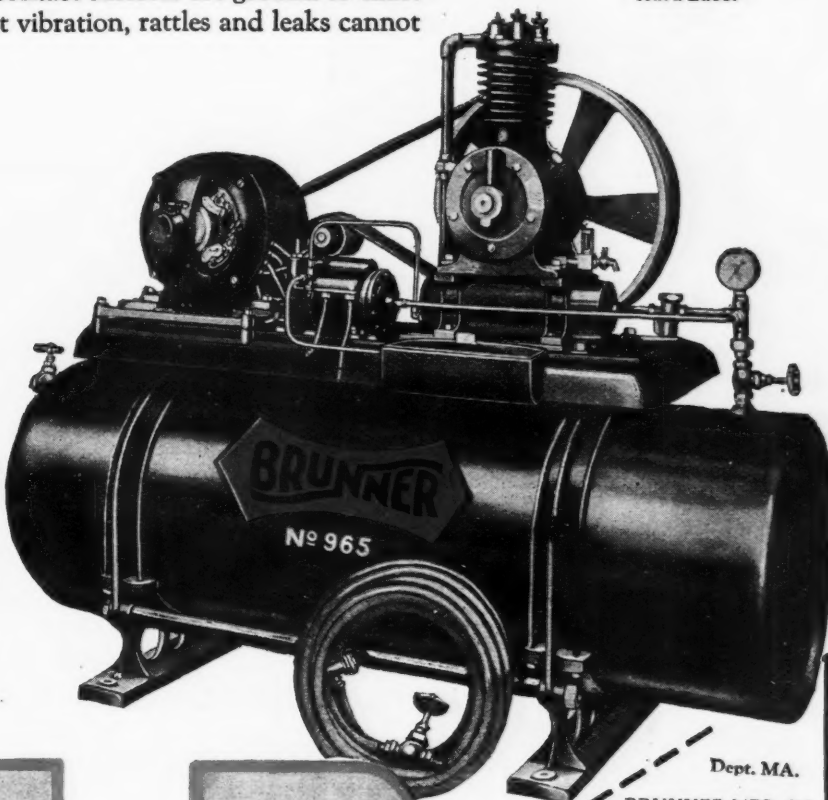
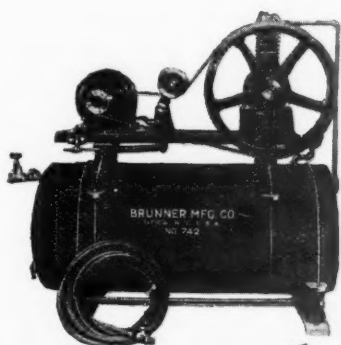
Heavy Duty Assembly. Smooth and silent as an eight cylinder motor—balance load type—no vibration.

All running surfaces ground and polished—insuring perfectly fitting parts.

Capacity, 6 cu. ft. of air per minute at 350 R. P. M., 7.70 cu. ft. at 450 R. P. M. 65 gallon heavy Brunner Drawn Seamless steel tank.

NOISELESS—
VIBRATIONLESS

Good for Twenty Years of
Hard Labor



Send
the
coupon for
your copy



COMPANY, UTICA, N. Y.
SAN FRANCISCO, CALIFORNIA

NER

Dept. MA.

BRUNNER MFG. CO.
UTICA, N. Y.

Gentlemen:
Please send me a copy of ☐ "Air
Profits" ☐ "Sales Through Courtesy." I am
interested in air compressors.

NAME

ADDRESS

JOBBER'S NAME

ADDRESS



Here's the pump
you ought to have this spring—a 5-gallon visible that makes people want to buy gas from you, because the pump looks so neat and clean—just looks as if it was bound to be accurate and give full measure.

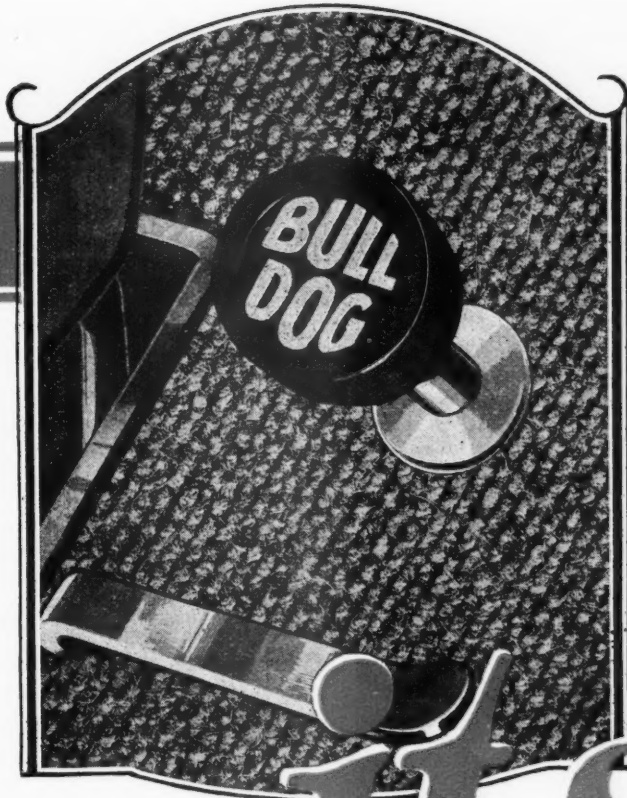
Trade in that dirty old pump on your curb and put in Fig. C-7—Post Sentry—shown here. It will help you get business—it's the same pump filling stations use on their islands.

Post Sentry ^{C7}

Bowser construction throughout. Interlocking control. Theft-proof. Mistake-proof. Extremely low maintenance cost. Extremely high trade-in value.

Price? Very low because of big production. Pictures and layout for gas and oil service that will get you your full share of the passing trade sent free. Ask Dept. 14.

S.F. BOWSER & COMPANY, Inc.
Pump and Tank Headquarters
FORT WAYNE, INDIANA.
Sales and Service Offices and Representatives Everywhere



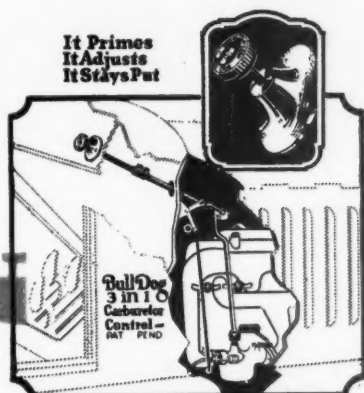
The Best Accelerator for Fords

Simple, Easy to Install, Positive action—A proven product, known and asked for wherever Fords are driven.

it sells

This is the answer to Bull Dog success

The tremendous Ford Market is rapidly accepting the BULL DOG Three-in-One Carburetor Control. Since its first appearance at the A. E. A. Show last November, this new product has made astounding strides in sales. It *primes* and *adjusts* the Ford Carburetor. The *Dash Control* stays put until the engine is thoroughly warmed up. Sells for \$1.50.



A CONTINUOUS stream of sales—surpassed by no other accessory for Fords. This is the record of the BULL DOG Foot Accelerator and the reason for its success. When you stock BULL DOGS you know they will sell—you are sure of your full profit on every sale—you can depend on giving your customers complete satisfaction—you are certain of fast, continuous turnover without resorting to cut prices or forced sales.

The W. H. Thomas Manufacturing Co.
Spencer, Iowa

visible
24 hrs.
a day

theft
proof

SAFE-T-STAT

The New Improved 1925

SAFE-T-STAT

The Motor Heat Indicator
That Every Car Owner Wants

—And Here's Why!

- 1—An **accurate** indication of your engine temperature.
- 2—It's on the dash.
- 3—Visible night and day.
- 4—It's theft proof.
- 5—It's a beautiful instrument.
- 6—It leaves the radiator cap free for its own distinctive emblem.
- 7—It sells for \$7.50.

SAFE-T-STAT is electrically controlled and it is the one device that accurately registers the true motor temperature under all conditions. One model fits all cars—it's easily and quickly installed, is dependable in operation. AND is as necessary to an automobile as a thermometer is to a doctor.

ASK YOUR JOBBER

OR

ASK US

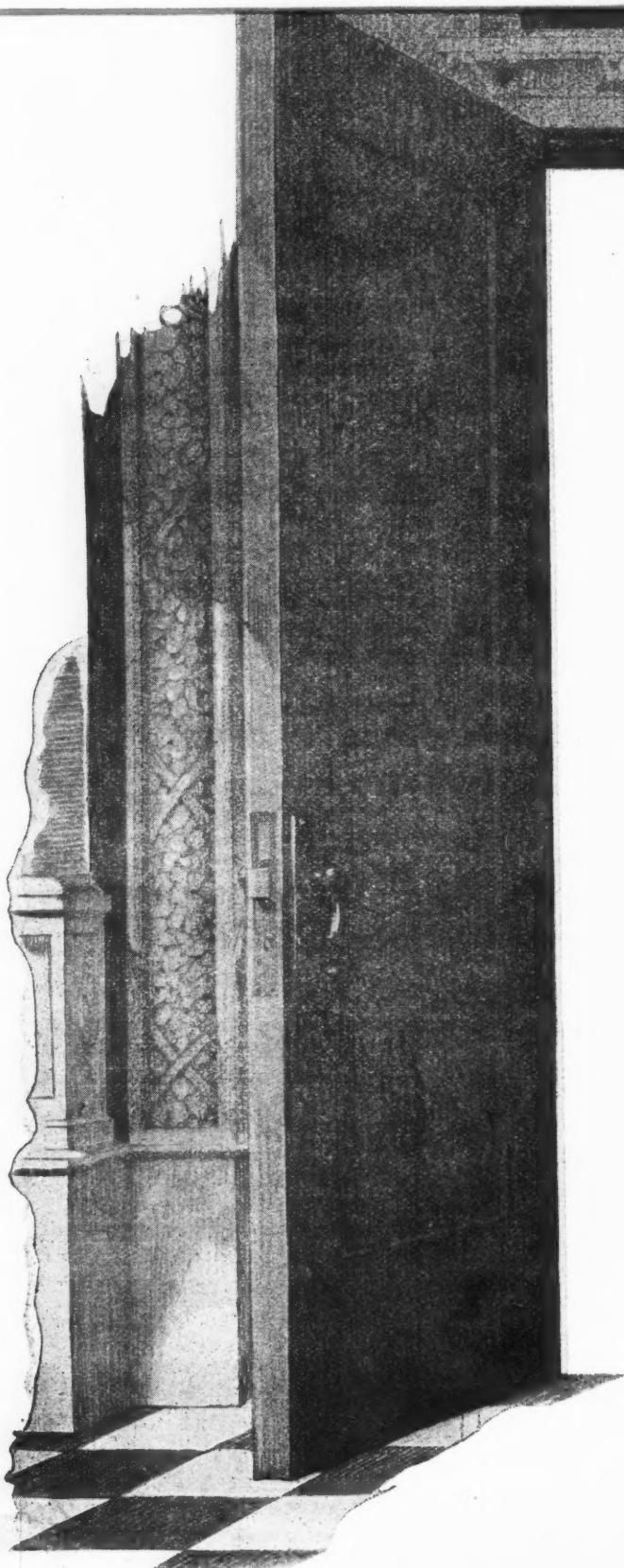
And get busy on these new profits

THE SAFE-T-STAT COMPANY, INC.

79-85 Bridge Street

BROOKLYN, N. Y.

STEWART-WARNER'S Plan of Helpfulness



MANY car and accessory dealers have already expressed their appreciation to Stewart-Warner in undertaking a tremendous plan of helpfulness for them.

This plan will be of great benefit to the automotive industry at large. It will show how they can build business along sounder and more fundamental lines. It will be a source of information, advice and counsel which will enable car and accessory dealers in all sections of the country to find a solution for their many problems in management, selling, credits, advertising, etc.

So vast and comprehensive is this work that Stewart-Warner is offering it to the entire trade whether or not they sell Stewart-Warner Accessories.

This plan of helpfulness will become effective at once. Every dealer who is in any way connected with the automotive industry is privileged to write to the general offices of Stewart-Warner for any information needed in solving individual problems.

Perhaps you have a vision of the possibilities in your own shop or garage. Perhaps you have felt that there was just one thing missing that would turn your business into success. Or perhaps you have felt that you were too tied down with your duties, that hard work and long hours were keeping you from enjoying the pleasures of life that are rightfully yours.

Perhaps you have wanted to improve your business, store or shop—possibly erect a new building or build a home for your family.

By this plan of helpfulness Stewart-Warner expects to bring your hopes and ambitions nearer to reality.

STEWART-WARNER

1826 Diversey Blvd.

Welcomed by Dealers and Accessory Men

Competent advice and counsel is in many cases what you need. Perhaps as you read this announcement you can think of something you would like to ask about.

How This Information is to be Distributed

A new department has been created in the Stewart-Warner general offices in Chicago. This is to be the Dealer Information Bureau. This entire department is assimilating helpful information that is now available to the automotive trade. As your requests come in they will be handled promptly. This department will see that every question is answered in a comprehensive way and that advice and counsel come from the most authoritative and up-to-date sources.

This work will become more valuable from year to year. It is not a cut and dried plan. The information and suggestions that you receive will be based on fundamental facts of business, and in it will be up-to-date, vital information covering specifically all points you ask for in your request.

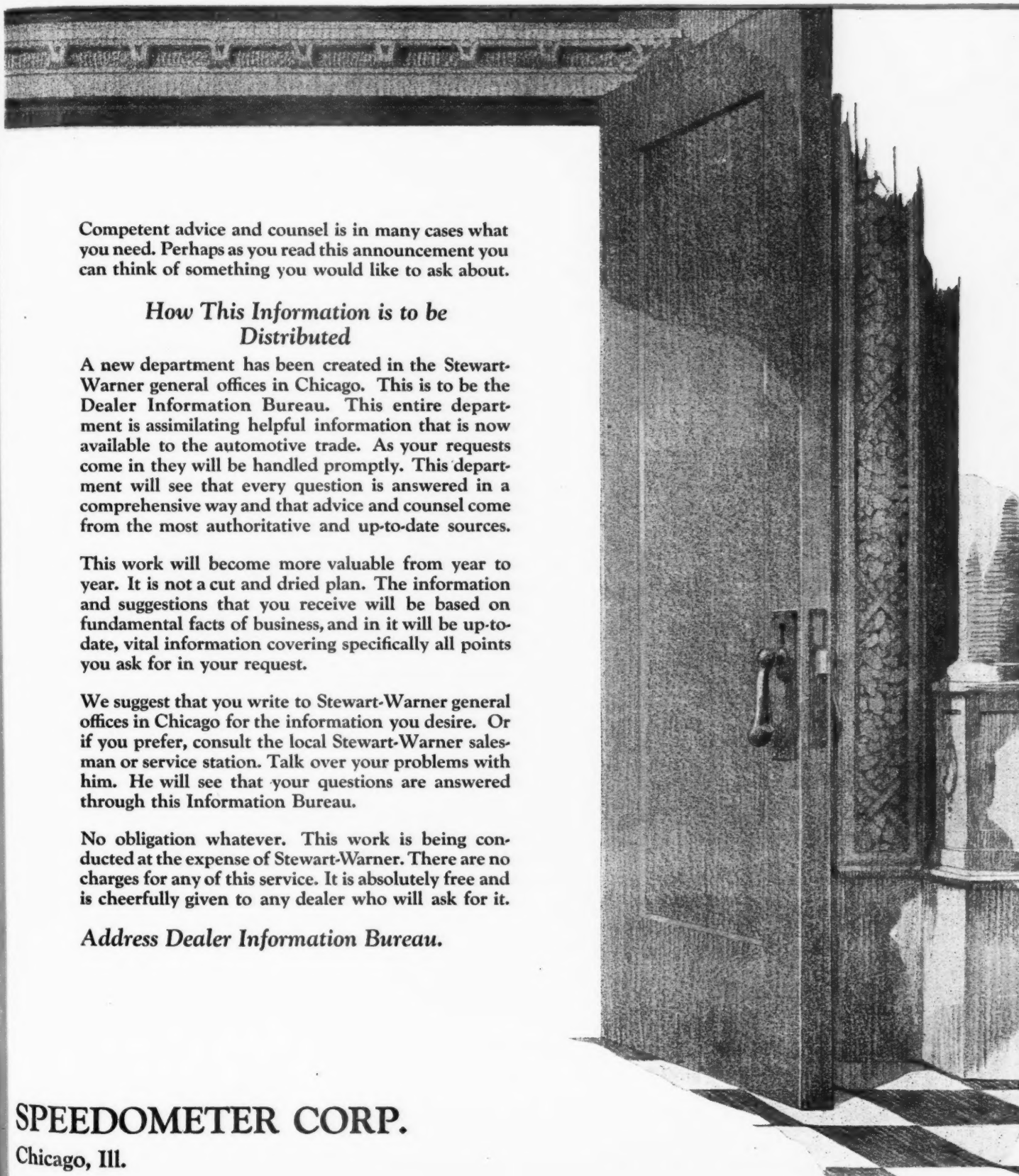
We suggest that you write to Stewart-Warner general offices in Chicago for the information you desire. Or if you prefer, consult the local Stewart-Warner salesman or service station. Talk over your problems with him. He will see that your questions are answered through this Information Bureau.

No obligation whatever. This work is being conducted at the expense of Stewart-Warner. There are no charges for any of this service. It is absolutely free and is cheerfully given to any dealer who will ask for it.

Address Dealer Information Bureau.

SPEEDOMETER CORP.

Chicago, Ill.



An important message to *automobile dealers*



Would you like to increase your volume of sales?
 Would you like to fill up the valleys in your sales curve?
 Would you like to strengthen your business? Make it better and sounder as well as bigger?
 Would you like to accomplish these things with little or no increase in your capital investment?
 Answer to all of them—Yes.
 We can show you a safe sensible way to bring about these improvements; by selling "Caterpillar" Tractors.
 Glance over this summary of the "Caterpillar" market.

States, Counties, Municipalities, Park Boards

for road work, snow removal, public works of all kinds. "Caterpillars" are responsible for building and maintaining more miles of good roads, the country over, than any other form of power.

You're selling TRANSPORTATION now. How logical it is for you to promote, through "Caterpillar" sales, road improvements which will inevitably increase your sale of cars!

Public Utilities, Industrial Plants

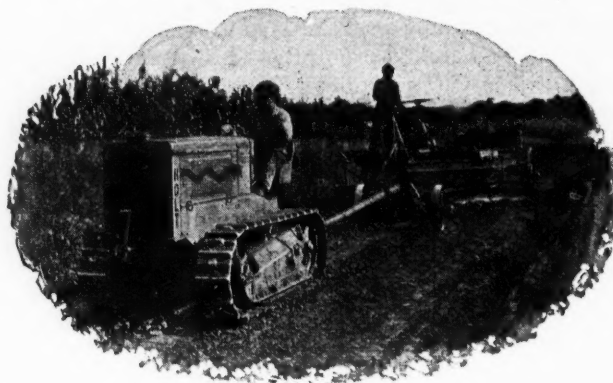
Here is a rapidly growing field for "Caterpillar" promotion. Every day new uses are being found for the "Caterpillar." Many of the leading concerns in American business—offhand you wouldn't think of them as needing "Caterpillars"—are "Caterpillar" owners; and completely satisfied.

Contractors, Engineering Firms

Every contractor engaged in road work, excavating, grading and earth-moving operations is a "Caterpillar" prospect; and every engineering project involving work of the same kind represents probable sales of "Caterpillars." On work of this sort, the "Caterpillar" handles the unusually difficult tasks which no other power can perform.

Farming

More and more business farmers are finding that "Caterpillars" do MORE WORK FOR LESS COST. There's a fine market here; growing steadily; grain farming, orchard and vineyard work; and every power-demand the farmer has.



Maintenance work on a county road. 2-ton
"Caterpillar" pulling blade grader.



You see how fundamental that market is. It is steady; all year; growing.
 The "Caterpillar" will HELP your car business; not interfere with it. It's a QUALITY machine.
 The "Caterpillar" dealer enjoys the most substantial tractor business in his community.
 And many of our most successful dealers are automobile dealers.
 Your territory may offer an extraordinary opportunity. Find out about it. Write us.

There is but one "Caterpillar"—Holt builds it

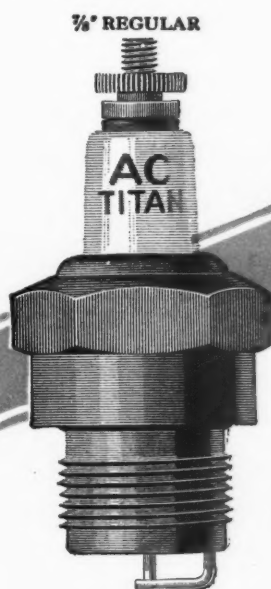
THE HOLT MANUFACTURING COMPANY, Inc.
 PEORIA, ILLINOIS STOCKTON, CALIF.

U. S. A.

EXPORT DIVISION: 250. W. 54TH STREET, NEW YORK, N. Y.

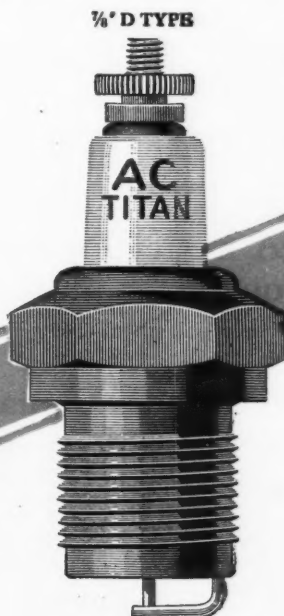
More than 85% of the American cars and trucks produced, Fords excluded, are AC-equipped

The 6 Big-Selling Types of AC Spark Plugs



3/8" REGULAR

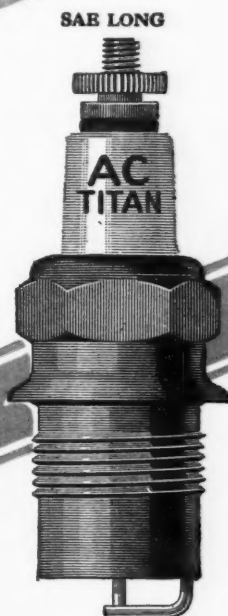
for
*Cadillac
*Flint
*Hupmobile
*Maxwell
*Star
200 Others



3/8" D TYPE

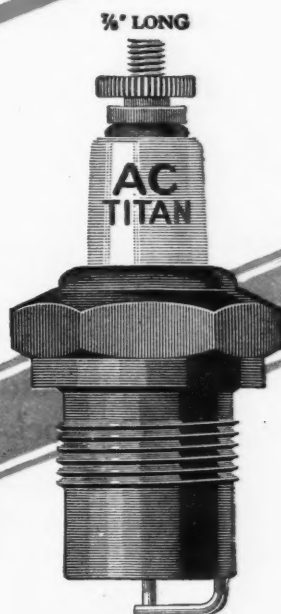
for
*Dodge Brothers
*Chandler
*Hanson
*Rickenbacker
*Westcott

*Factory Equipment
*With Carbon-proof Porcelain



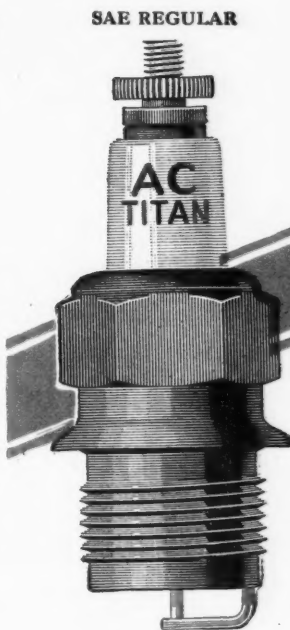
SAE LONG

for
*Buick
*Nash
*Oldsmobile Six
*Durrant Four
*Oakland (to 1924)



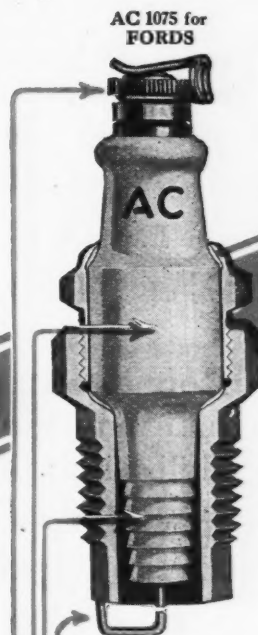
3/4" LONG

for
*Chevrolet
*Oakland
*Buick (to 1924)
*Kissel
*Stephens



SAE REGULAR

for
*Studebaker
*Durrant Six
*Marmon
*Stearns-Knight
*Stutz



AC 1075 for FORDS

Drip Electrode
Forms Natural Oil
Drain
High Temperature
Fins. Patented Car-
bon-proof Porcelain
Heavy Body
Porcelain
Spring Terminal
Clip

DEALERS who have a good assortment of AC Spark Plugs can build a profitable business.

The demand is assured as each type has its own following, due to car equipment.

OTHER SIZES OF AC SPARK PLUGS

REGULAR METRIC for	SAE EXTRA LONG for	1/2" CARBON-PROOF for	3/4" LONG BODY for
*Hudson *Essex *Duesenberg *Wills-Sainte-Claire	*Dort Six *Apperson Six *McFarlan *Elgin	*Overland *Reo *Factory Equipment *With Carbon-proof Porcelain	*Chandler (to 1924) *Willys-Knight

AC-SPHINX
Birmingham
ENGLAND

AC Spark Plug Company, FLINT, Michigan
Makers of AC Spark Plugs—AC Speedometers

U. S. Pat. No. 1,335,727, April 13, 1915; U. S. Pat. No. 1,216,139, Feb. 13, 1917. Other Patents Pending

AC-OLEO
Levallois-Perret
FRANCE

4 reasons

Why you can increase your fan belt sales and profits with the Farran-oid Line—

The completeness of the Farran-oid line simplifies stocking and hastens turnover

Fan Belts

Red Radiator Hose

Black Radiator Hose

Garage Air Hose (Red)

Car Washing Hose

Door Checks

Tire Flaps

Blowout Patches

Tube Patches

Ford Floor Mats

- 1 —A Better Product—the highest quality builds good-will and brings repeat orders.
- 2 —A Popular Demand—consistent advertising creates it—performance holds it.
- 3 —A Good Margin of Profit — fully in keeping with present day costs of doing business.
- 4 —A Real Sales Plan—Your jobber will gladly call and explain it.

Round out the advantages of Farran-oid Fan Belts by handling the whole Farran-oid Line. The same high principles that have swept our Fan Belt into leadership are embodied in every product bearing the name.

THE FARRAN-OID COMPANY, Akron, Ohio

Farran-oid Products

HEAT-SHAPED TO INSURE
PERFECT ROUNDNESS

Pedrick

HEAT-SHAPED
PISTON RINGS

Plain Facts

You know, and so do we, that you are the man who sells piston rings. Your customer depends on **YOUR** judgment, **YOUR** skill and **YOUR** advice. He accepts whichever ring you want him to.

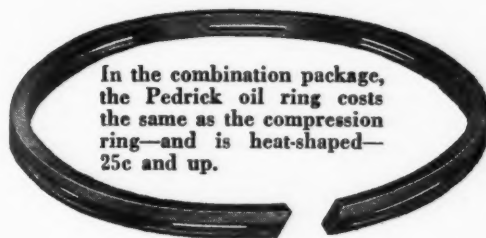
That's why Pedrick's little folder, "How to make your motor pull like new," doesn't mention Wilkening even once. All our effort is devoted to getting the car owner to ask your advice about having his motor overhauled. We do say that Pedrick rings are best. We mention the fact that the oil

ring and the compression ring cost the same—little more than the price of the ordinary cast out of round or hammered ring.

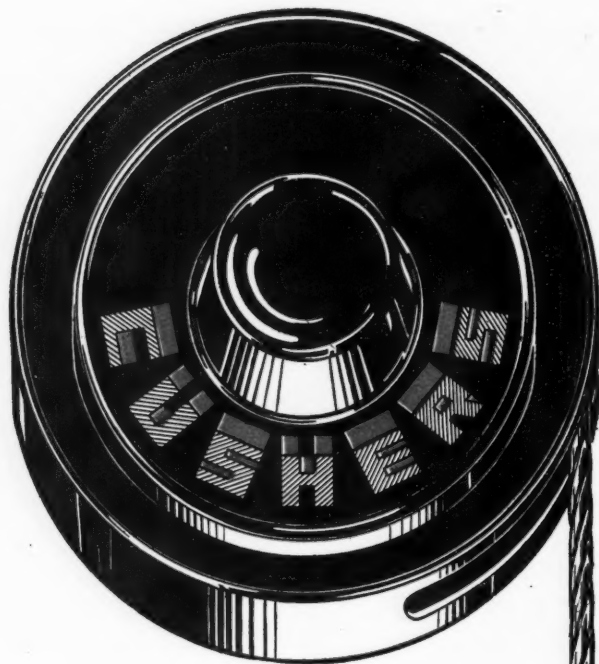
We say that the Pedrick ring insures full power. But, nowhere do we divert atten-

tion from the fact that you are the final authority on which ring your customers should buy.

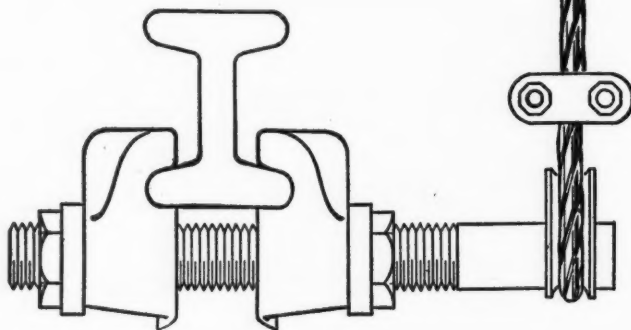
Pedrick rings carry a high profit. They are adequately advertised. They give satisfaction. Ask the jobber for genuine Pedrick rings, **AND INSIST ON GETTING THEM.**



Wilkening Manufacturing Co.
Philadelphia



Every Set Sells Any Customer



Whatever the make of car or model, you are able to fit it perfectly by carrying just the one standard size of Cushers.

Cushers are the spring control device with the compensating clutch which automatically proportions Cusher action to the characteristics of any car, providing Cusher *Flash action* on rough roads; preventing stiffness on smooth pavements.

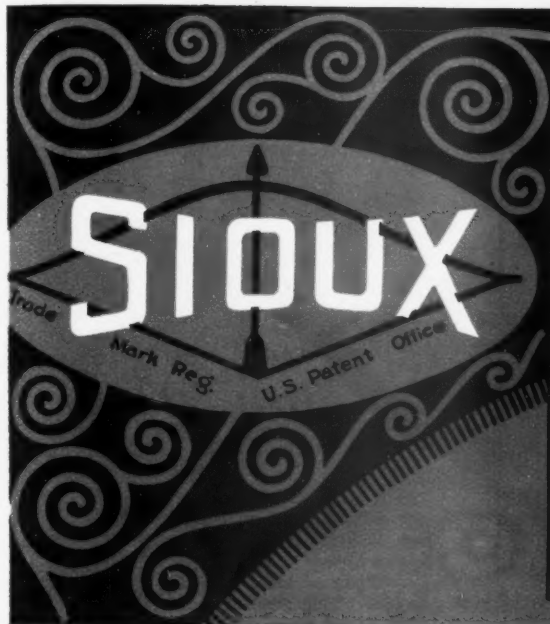
Not only have Cushers, in the single size, made it easy to stock such a device; but Cushers also eliminate the service bugaboo. No "take-up" is ever needed by Cushers; no periodic

reconditioning; no parts to replace; not even lubrication is needed.

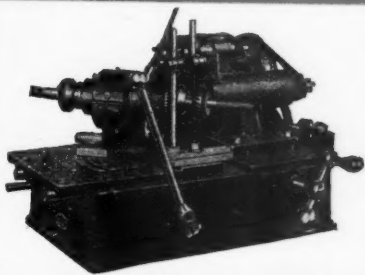
Who wouldn't handle a spring control device which takes the drawbacks out of the business? Cushers have *everything* in their favor—riding results—sales policy—powerful parent organization. Every week is telling how Cushers are winning this business back to the trade.

CHICAGO ROLLER SKATE CO.
Manufacturers of Screw Machines and Automotive Products
Cushers Sales Dep't, Fulton-Dean Co.
 332 South Michigan Avenue, Chicago

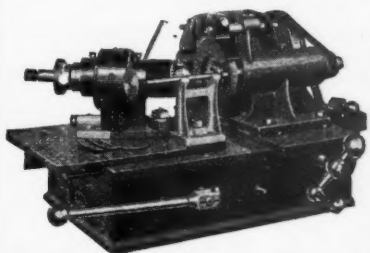
Cushers



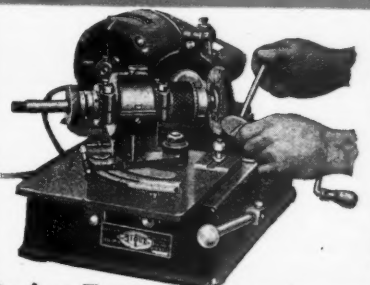
VALVE FACE GRINDING MACHINE



Sharpening Valve Seat Reamer



Truing Valve Stem Ends



Carbon Removing Attachment

A money-maker in ANY shop!

HERE'S the tool you can use on many jobs for all makes of cars. Mechanics are amazed at the ease, speed and accuracy with which it grinds valves, removes carbon, sharpens valve seat reamers, grinds valve stem ends, etc. It has set a new standard of speed and accuracy—a real necessity in every shop.

It grinds and refaces any valves up to $4\frac{1}{2}$ inches in diameter, and accommodates valve stems of $\frac{5}{8}$ inch and under. It has marked adjustment stops for valve angles of 30, 45 and 60 degrees. It also grinds at any other angles desired.

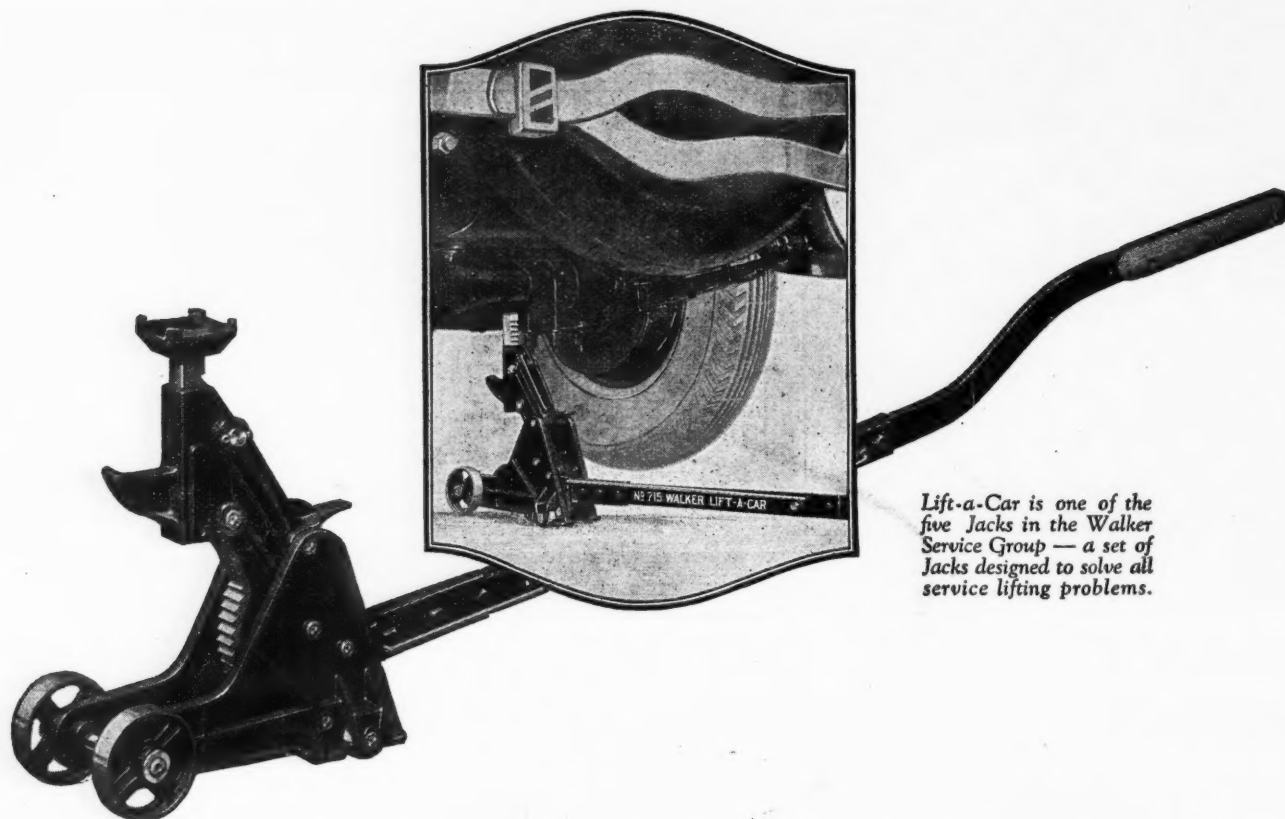
Before you buy any machine, it will pay you to investigate the Sioux Valve Face Grinding Machine. It comes complete as follows:

1 cross bar, 1 spring, 1 clamp assembled, 1 dresser clamp, 1 bracket and one diamond assembled for truing emery wheel, 1 V bracket stand, 1 each No. 66, No. 725 wrenches, 1 set screw wrench, 1 set blue print instructions, 1 catalog, including complete valve seat specifications. It is equipped with a special chuck, and is driven by a $\frac{1}{4}$ h. p. electric motor, with 10 foot cord and plug.

Your Jobber Sells It

ALBERTSON & CO., SIOUX CITY, IA.



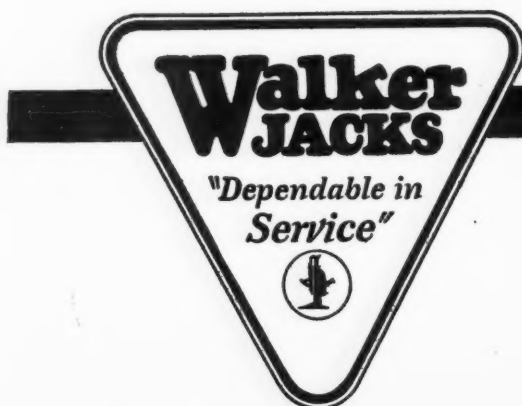


Lift-a-Car is one of the five Jacks in the Walker Service Group — a set of Jacks designed to solve all service lifting problems.

If I could walk into your service garage tomorrow morning and show you how the new Walker Lift-a-Car would clear all interferences on cars equipped with bumpers and rear tire carriers, and how quickly and easily every lift could be made, there would only be one reason why you would not buy one .. That would be because you were going out of business, for you could not operate a Lift-a-Car and fail to see that it was the one tool you had always been looking for, but had never found.

Willard Walker

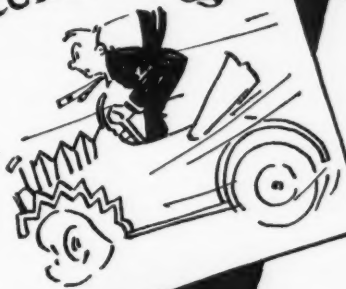
President.



Walker Manufacturing Co.
Racine, Wisconsin

IT PAYS TO GIVE THE MOTORIST
WHAT HE WANTS —
A RELIABLE LINING

He Won't thank you for
saving him a few cents on a
Lining — He will
thank you for
saving him a
SMASH



This sign on your shop
is a sign that you
DO IT RIGHT

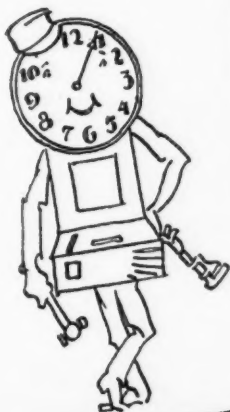
The satisfied
customer
pays with a **SMILE**
and **CALLS AGAIN**



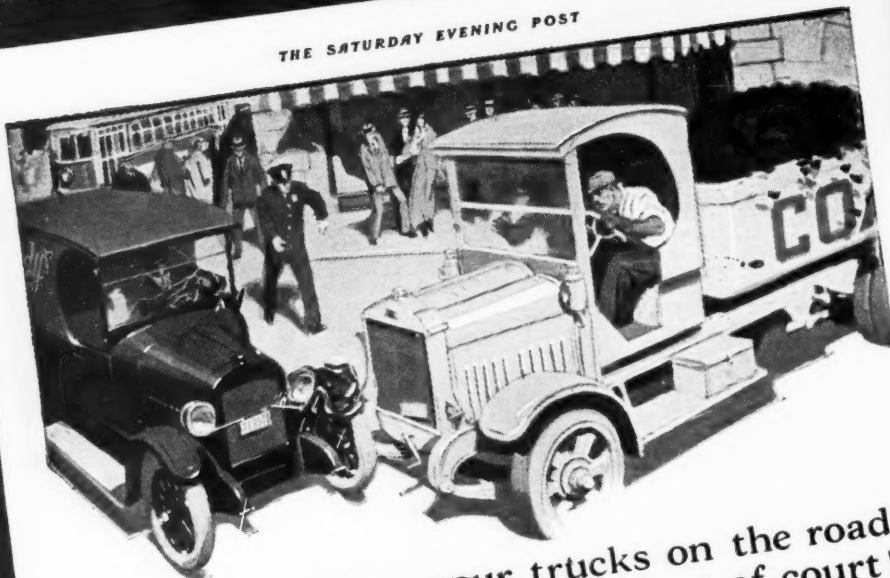
Give him
a **GOOD JOB**
and
charge him
what it's
WORTH



LABOR is
the **BIG COST**
on renewals —
It costs no more
to install a
GOOD
LINING



Thermoid
Hydraulic-Compressed **Brake Lining**



THE SATURDAY EVENING POST

Watch Our
National
Advertising

Keep your trucks on the road
and your drivers out of court!

A Reliable Brake Lining is a Protection for the Garageman

YOU can't tell whether a piece of brake lining is good, bad or indifferent by looking at it. Or by biting it. Or smelling it. Or by hitting it with a hammer.

Yet the car owner expects you to know good brake lining. If he gets in a jam due to faulty brakes, he doesn't blame it on the brake lining manufacturer. He blames it on *you*.

What's the answer? Use Thermoid on *all* your brake renewal jobs. You know Thermoid as a reliable lining made by a reliable manufacturer who has been in the business for years and expects to remain in the business for years to come.

You know Thermoid won't be good *sometimes*, but *all* the time. Don't gamble with a customer's good will just for the sake of saving him a few cents on a lining. Give him a good lining. Tell him it's a good lining and charge him for it accordingly.

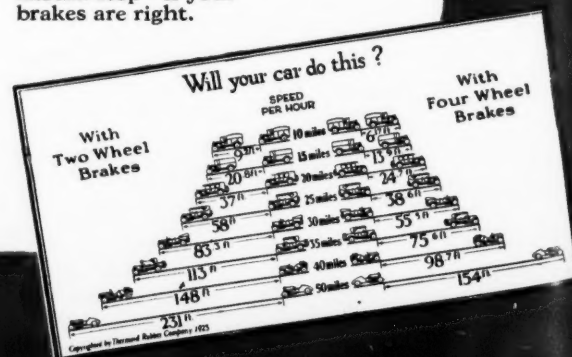
Then everybody will be satisfied.

The chart below shows the distances in which your car should stop—if your brakes are right.

THERMOID RUBBER COMPANY

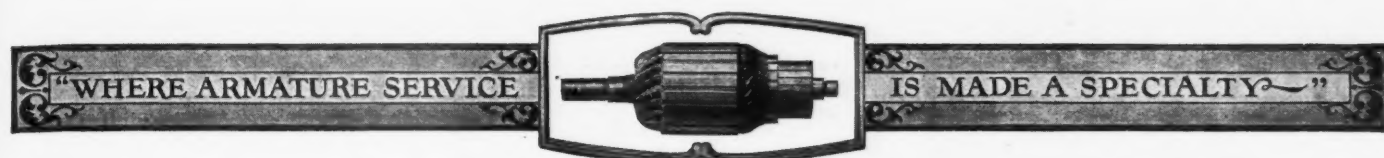
Factories and Main Offices
TRENTON, N. J.

Makers of Thermoid and Rexoid Transmission Lining,
Thermoid-Hardy Universal Joints and
Mechanical Rubber Goods



Thermoid
Hydraulic Compressed
Brake Lining

or Short Stops
and Long Service



Prices are Down

Guaranteed Armature Rewinding at New Low Prices Increases Your Profits. Dealers From All Over the Country Are Hooking Up With Our Service.

Times have changed in the industry. Rewound armatures have come into great favor. For years we have labored to establish the dependability of rewounds. We perfected methods, built special machinery, organized an expert staff, attached a guarantee to the finished product. Our diligence has been rewarded with a nation wide business. Naturally, with perfected methods and a continuous flow of business we are in a position to give the dealer the utmost advantage in price and service. Don't keep on doing business on the old basis. See the greater profits to be made with a smaller investment in armatures. Compare these prices with those you are paying.

These New Prices Are Net to Dealers

For Fords		For Miscellaneous 2-Unit Types	
Single Lots	\$1.50	Single Lots	\$3.50
Lots of 5.....	1.40	Lots of 5.....	3.30
Lots of 10.....	1.30	Lots of 10.....	3.15
25 and up.....	1.25	25 and up.....	3.00

Above prices are based on quantity sent in. You can mix Ford and other armatures and pay rates based on the size of the entire order.

Prices on Starter Armatures and Motor Generator Armatures are in proportion to the above.

Delco Motor Generator Armature.....	\$8.00
North East Motor Generator Armature.....	7.00

Also ask for our new Armature Book containing complete facts on armatures. It is free—you incur no obligation by asking for it.

U. S. ARMATURE SERVICE
 Division of U. S. Auto Supply Co., 3845 S. Wabash Ave.
 CHICAGO, ILL.

You'd have to pay him to keep the old valves if he saw them



WHEN a customer crawls in with a car that won't pull a moderate hill on high, requires a shift into second in traffic, and can't snap away when the signal says "Go!" you can probably show him a miracle with a new set of Thompson Silcrome Valves.

You might try fixing up the old valves. But what's the use if they're pitted, warped, or burned on heads or stems? The chances are, you'd have to *pay* the owner to keep such worn-out valves if he saw them.

Make your customer really enthusiastic about the performance of his car, by putting in brand new Thompson Silcrome Valves—the kind of valves that are standard equipment in America's finest cars and trucks.

Do you know that Thompson Silcrome Valves are virtually the only brand used in airplanes? It's because only valves of their high quality can stand the punishment in those engines. Thompson Silcrome Valves have unique and extraordinary ability to resist burning heat, warping, strains and wear. That's the sort of valves your customers want in their cars, and the sort that will reflect most credit on your judgment and service-ability.

You can get Thompson Silcrome Valves from leading jobbers—for all makes and models of cars and trucks—regular and oversize stems. The big thing to remember is to ask for them by name—Thompson Silcrome Valves.

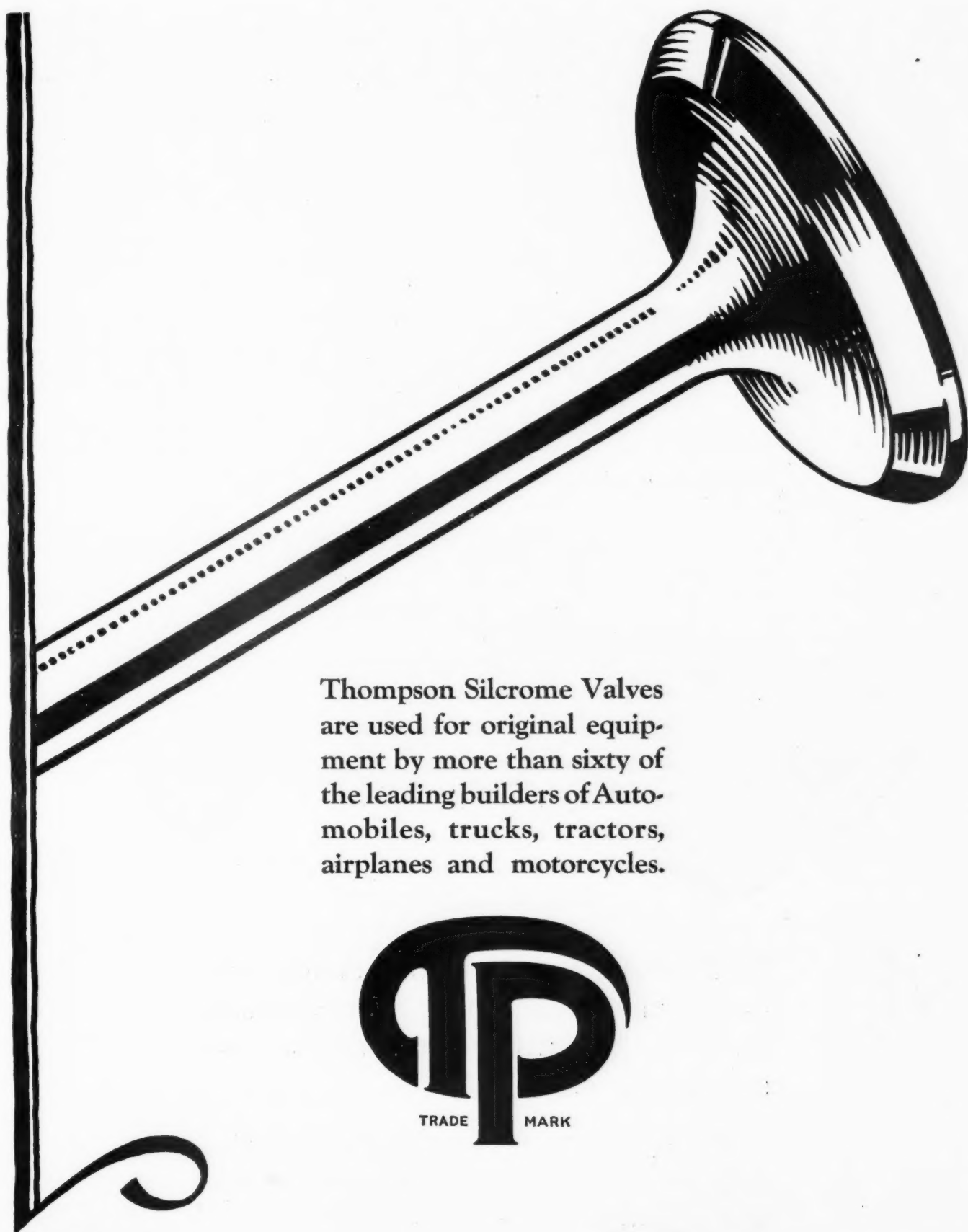
THOMPSON PRODUCTS, INC., CLEVELAND

Also Manufacturers of Tappets, King Bolts, Tie-Rod Bolts, Spring Bolts, Bushings and Starting Cranks

EXPORT DEPARTMENT: 130 West 42d St., New York, U. S. A.

CABLE ADDRESS: "THOMPRO — NEW YORK"

Thompson



Thompson Silcrome Valves
are used for original equip-
ment by more than sixty of
the leading builders of Auto-
mobiles, trucks, tractors,
airplanes and motorcycles.



Silcrome Valves

WILLS SAINTE CLAIRE



The Five-Passenger Sedan



ONE Wills Sainte Claire dealer sold *five* of the new Wills Sainte Claire Sixes to *five* different men on *one* demonstration.

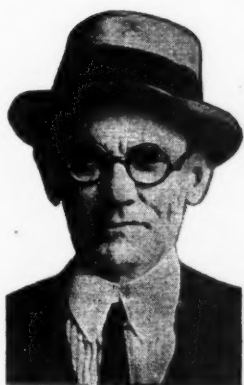
If your territory is still open it will pay you to find out if you can get the Wills Sainte Claire Franchise.

WILLS SAINTE CLAIRE, Inc.
MARYSVILLE, MICHIGAN





"HOLMES WRECKERS Tow in 90% of our Profitable Jobs"



I. W. HARRELL

Proprietor "Spider" Garage, Atlanta, Ga., has written this advertisement for Holmes Wreckers. It is the first of a series written by the leading garage men of this country for the Ernest Holmes Company.

Fully 90% of the most profitable repair jobs that we get do not drive in our shop—we tow them in. Our fleet of four Holmes Wreckers not only brings us big dividends in towing fees but they keep our shop filled with work even when other garages are having slack time.

We consider our first Holmes Wrecker the best investment we ever made. Before we bought it we were barely making a living and did not think that we were large enough to need a wrecker. However, after we put it on the street it started to bring in work and since then we have bought three more Holmes Wreckers as a result of the good work of the first one. They have made money for us continuously and our business has grown to such an extent that we have recently opened up a new shop.

Garage men who are having hard going will find that a Holmes Wrecker will pay for itself in towing fees alone and in addition keep their shop busy with clean profitable work. We know from actual experience that a Holmes Wrecker will create more business and advertise a garage more than any other medium possibly could.

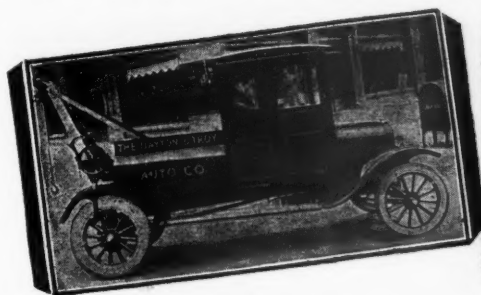
"SPIDER" GARAGE.

I. W. Harrell

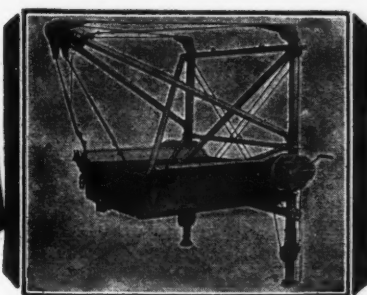
What Holmes Wreckers have done for Spider Garage and are doing for thousands of others, they will do for you. Get the facts. Don't think you are too small or that you will have trouble financing it. Let us prove to you that a Holmes Wrecker is the surest money maker you can possess.

Ask your Jobber to tell you about the three types of Holmes Wreckers, Holmes Cantilever Jack, Holmes V Tow Bars and Holmes Towing Pole or write this company for complete information about Holmes Equipment.

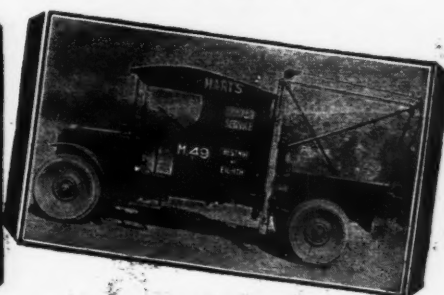
ERNEST HOLMES COMPANY, Chattanooga, Tenn.



Holmes Wrecker No. 110



Holmes Wrecker No. 485



Holmes Wrecker No. 350



RYAN MOTOR COMPANY

Authorized Sales and Service

Lincoln *Ford* Fordson
CARS - TRUCKS - TRACTORS

2-4-6-8 SOUTH MAIN STREET
TULSA, OKLA.

February 23, 1925.

Chilton Automobile Directory,
26th & Chestnut Sts.,
Philadelphia, Pa.

Gentlemen:

We wish to express our appreciation of the assistance rendered by "The Yellow Directory."

This silent salesman is the greatest encyclopedia carried on the shelves of our Purchasing Department. In other words, whenever we are unable to purchase any item in the automotive line, either locally or from the various jobbers calling upon us, it is only necessary for us to turn to the Chilton Yellow Directory and our further searching ceases.

The Yellow Directory is also used to great advantage by the RYAN EQUIPMENT CO. who are the TRACTOR, IMPLEMENT AND EQUIPMENT DISTRIBUTORS for this territory.

We cannot praise too much the assistance offered by THE YELLOW DIRECTORY.

A SERVICE INSTITUTION





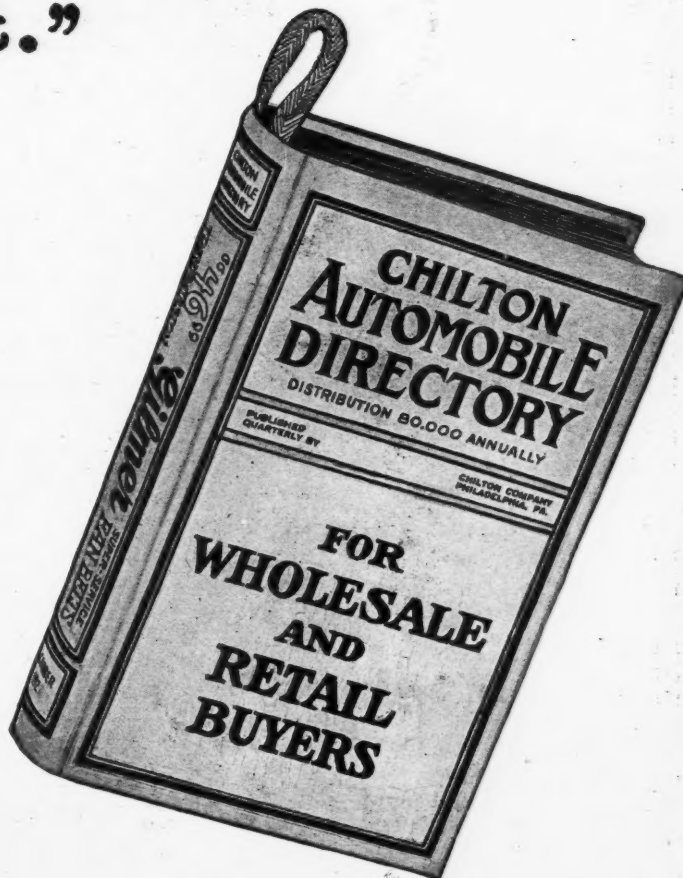
"..... the greatest encyclopedia
carried on the shelves of our
Purchasing Department."

L. Beck.
Purchasing Agent.

"When locating sources of supply,"
says Mr. Beck, "it is only necessary
for us to turn to the Chilton Yellow
Directory and our further searching
ceases."

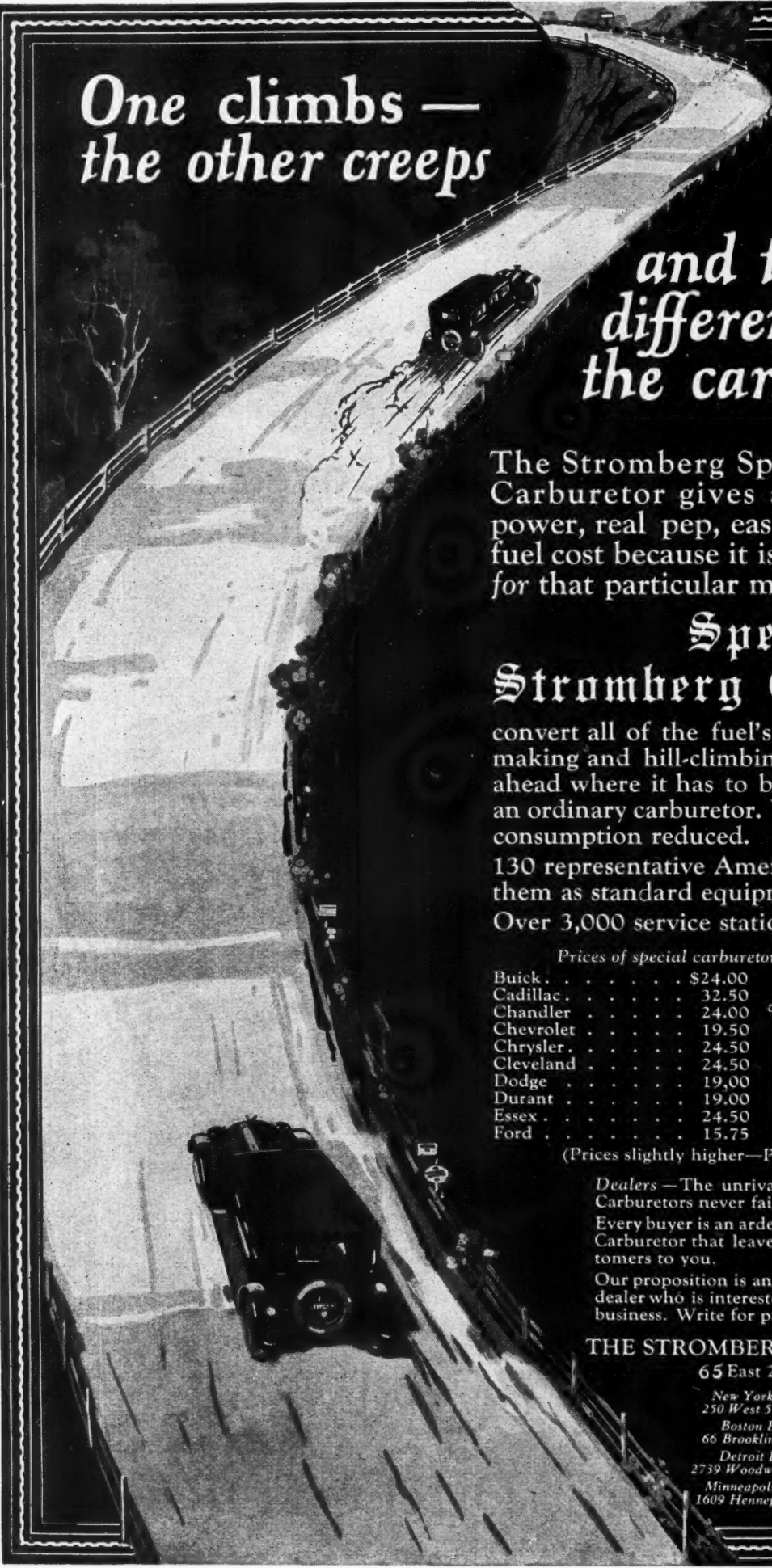
In every service station where pur-
chases of accessories and repair parts
run into thousands of dollars, a de-
pendable source of buying data is
indispensable.

The Yellow Directory is "always in
use" by Mr. Beck as it is by prac-
tically all other Purchasing Depart-
ments of the Wholesale, Retail and
Servicing branches of the Industry.



CHILTON AUTOMOBILE DIRECTORY

Makes It Easy to Buy



One climbs —
the other creeps

and the only
difference is in
the carburetors

The Stromberg Specially Engineered Carburetor gives any motor greater power, real pep, easy starting at a lower fuel cost because it is designed exclusively for that particular motor.

Special Stromberg Carburetors

convert all of the fuel's energy into actual mile making and hill-climbing force. The car jumps ahead where it has to be "jockeyed" along with an ordinary carburetor. Waste is eliminated. Gas consumption reduced.

130 representative American manufacturers use them as standard equipment.

Over 3,000 service stations in the United States.

Prices of special carburetors and complete equipment:

Buick	\$24.00	Hudson	\$28.50
Cadillac	32.50	Jewett	24.00
Chandler	24.00	Maxwell	19.50
Chevrolet	19.50	Nash	22.50
Chrysler	24.50	Oakland	22.50
Cleveland	24.50	Oldsmobile	19.50
Dodge	19.00	Overland	17.50
Durant	19.00	Reo	24.50
Essex	24.50	Star	18.00
Ford	15.75	Willys-Knight	19.00

(Prices slightly higher—Pacific Coast and Canada)

Dealers—The unrivaled performance of Stromberg Carburetors never fails to fully satisfy the car owner. Every buyer is an ardent booster and every Stromberg Carburetor that leaves your place will send new customers to you.

Our proposition is an unusually attractive one for the dealer who is interested in obtaining more and better business. Write for particulars today.

THE STROMBERG MOTOR DEVICES CO.

65 East 25th Street, Chicago

New York Branch
250 West 57th Street

Boston Branch
66 Brookline Avenue

Detroit Branch
2739 Woodward Avenue

Minneapolis Branch
1609 Hennepin Avenue

San Francisco Branch
740 Polk Street

Los Angeles Branch
1200 South Grand Avenue

Seattle Branch
1400 Twelfth Street

London Branch
173-175 Cleveland St. W-1

Isn't This a Great Opportunity For You?



FISK BALLOON TIRES
ABSORB THE SHOCK

In full Color
**This is the
window display
Fisk Dealers are
using in April**

In all our twenty-five years' experience, in spite of the wonderful success Red-Tops, Fisk Cords and Fisk Transportation Cords have met with, none of these has captured such instant, wide-spread favor as the Fisk Balloon.

Fisk Dealers are reaping the harvest. Why not join them now?

Fisk Dealers get better service on Balloon Tires because the Fisk Branch Organization is the most complete that there is in the country. It is a very distinct advantage that there is a Fisk Branch near you and that you always deal direct with the Fisk representative.

And as one illustration of the many ways the Fisk Company makes more sales for Fisk Dealers, we are showing, at the left, the latest Fisk Window Display now being released.

We can tell you about other advantages in the Fisk proposition if you will ask us to. Write us now. You will not be under obligation.

THE FISK TIRE COMPANY, Inc.
CHICOPEE FALLS MASSACHUSETTS

FISK



TIME TO RE-TIRE — GET A FISK

TRADE MARK REG. U. S. PAT. OFF.

SALES COST Cut 50%

BY TELEPHONE



A HUSTLING fruit and produce house of Atlanta found selling cost too high—and they found the remedy. They needed more frequent visits with their customers, and got them. They wanted to cover a bigger territory, and did so. With seventy-five long distance telephone solicitations a day to customers and prospects, a 1600% increase in telephoning, they rapidly extended distribution, increased business, and slashed sales cost in half.

The long distance telephone is making similar records today for thousands of concerns in hundreds of lines of business. Salesmen are covering bigger territories by telephoning to customers they otherwise could not reach. Long trips are saved, appointments and solicitations made, and goods sold by telephone. Customers are pleased. They place their orders more quickly and are assured of quicker delivery. The telephone is a great factor in buying, as in selling, and it is a powerful tool in collections. It is saving millions of dollars annually for American business men.

Are you using the economy of the telephone in your business as you should? Are your present telephone facilities ade-

quate, or properly arranged and distributed? Are you using an outgrown operating system, and are your employees trained in telephone use? The telephone question is the important one today, in any business institution.

Your concern, by calling the local Bell company, can have the Commercial Department make a study of the telephone in your business. In the meantime don't wait but save by long distance. The telephone on your desk connects with the man or concern a thousand miles away just as it does with the office in the next block. Day or night—now—it is ready to put you in communication with the man you want. *Number, please?*

BELL LONG DISTANCE SERVICE



Why not the whole job?

YOUR shop is the logical center for automobile service of every nature.

Why, with all your facilities, should you let car owners go elsewhere for such an important item as tire service?

Cars are driven into your shop every day for service—tuning up, overhauling, minor adjustments of every nature. Is there any better time to see the condition of a man's tires and sell tires and tire service?

It is much simpler and much more efficient for you to add a single man to your force as a tire expert than for some other person to establish a complete organization for selling tires. Yet, with such an addition, you can go after tire business on an aggressive scale, getting the business of your present trade, bringing new trade into your shop, and creating a reputation for your shop as the place of complete automobile service.

The car dealer or garage owner who obtains exclusive territorial representation for a good line of tires can easily make such a business pay the overhead of his entire establishment, and more. Lancaster Tires are sold only on such exclusive territory sales-contracts.

THE LANCASTER TIRE AND
RUBBER COMPANY
COLUMBUS, OHIO



LANCASTER CORD TIRES



New Departure Ball Bearings

The Triple Purpose Bearing

The New Departure Double Row Type

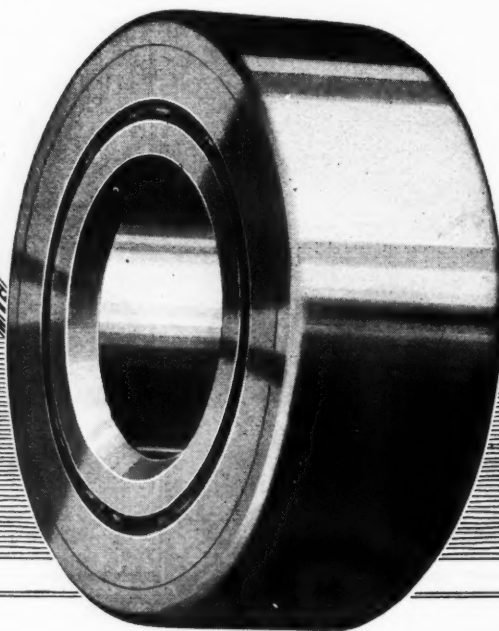
RADIAL load and thrust loads—not only in one direction but in any direction—are carried simultaneously by this New Departure Double Row Ball Bearing.

Mounted as a unit, it is non-adjustable, hence fool-proof; highly popular because of its availability in 75% of the places where ball bearings can properly be installed. Its design and unit construction economize space, time and labor of assembly, and requires no spherical seated washers.

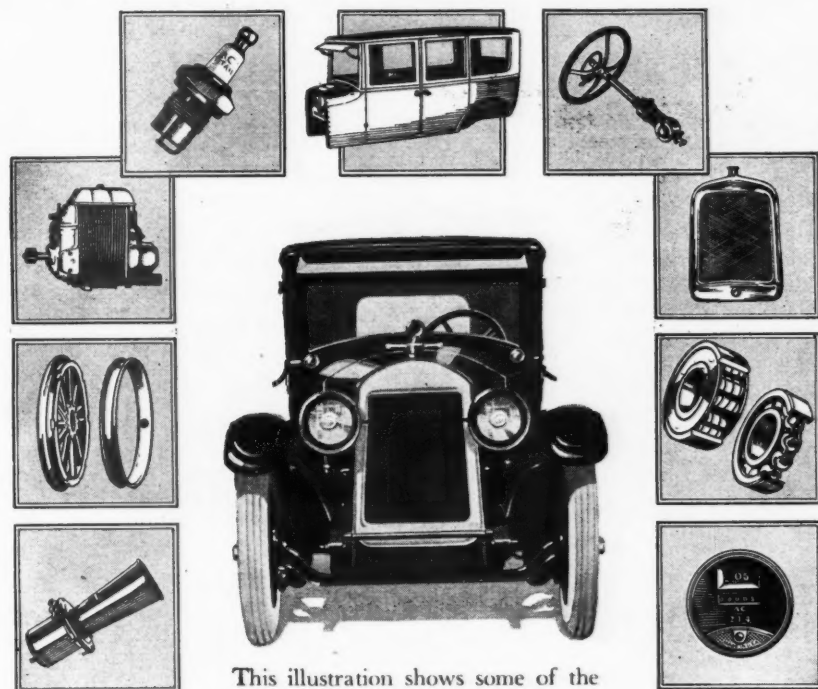
*An interesting treatise on the subject of
angular contact ball bearings will be
furnished upon request.*

THE NEW DEPARTURE MANUFACTURING COMPANY
Detroit BRISTOL, CONN. Chicago

167



FACTS ABOUT A FAMOUS FAMILY



This illustration shows some of the General Motors products used in the construction of other trustworthy cars.

Contributing to the merit of many trustworthy cars

You may think of General Motors primarily as a builder of complete motor cars and trucks. Yet within the General Motors family are a score of companies producing parts, accessories and equipment. Much of their output is sold to other automobile manufacturers

here and abroad; while some of the products of the accessory divisions find a wide variety of uses outside the automotive industry.

Thus General Motors contributes to the merit of many other trustworthy cars and to almost every phase of home and industrial life.

GENERAL MOTORS

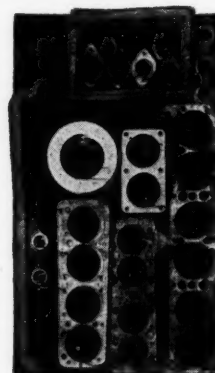
BUICK • CADILLAC • CHEVROLET • OAKLAND • OLDSMOBILE • GMC TRUCKS

General Motors cars, trucks and Delco-Light products may be purchased on the *GMAC* Payment Plan.

Insurance service is furnished by General Exchange Corporation

LYON AUTO PARTS CONTROL

Steel Storage Equipment for Automotive Parts



With 25 hooks adjustable on one inch centers any arrangement is possible with this Lyon Gasket Board.

Not one of 465 parts over three steps away

Here, in a space only 12 feet wide and a foot deep is stored a \$2,500 stock of 465 Buick parts. Three steps put any bin within reach.

At the end, swings the Parts Index Board, that tells you instantly the name and number, the exact location and the retail selling price of every part.

With the unit is a gasket board with twenty-five hooks and two end irons. Such a specialized equipment means your parts control is almost as simple as money control at the cash register.

This equipment is lasting. The units do not wear out, do not become obsolete. With new parts or with a change in the cars serviced, all you need to do is to put in the new parts, and arrange the Parts Index Board accordingly. If changes necessitate it, rearrangement of the adjustable shelves and dividers is easy.

Lyon Auto Parts Control Systems will fit any sized stock for any car. Write us about the stock you carry and the cars you service and we will give you complete information.

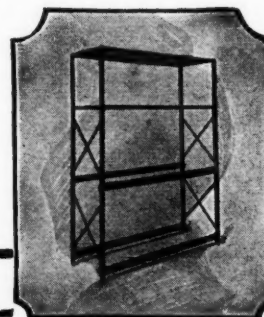
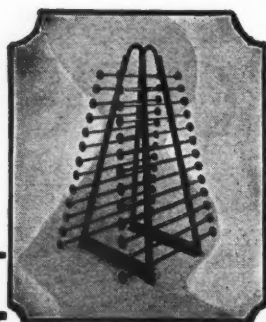
Lyon Metallic Manufacturing Company

Aurora / Illinois

Lyon Auto Parts Control Systems are sold by
leading Automotive Jobbers



for every storage need



**VEE ROUND**

Fits any Grooved Pulley, wedging itself tightly and firmly into the groove regardless of the angle of pitch. Their construction insures reliable service always. It is oil, heat and water-proof, with a sureness of grip that guarantees dependable performance. Self-Adjusting! Fewer sizes to carry in stock, insuring a quicker turnover.

**FAN BELTS**

THE DEMAND FOR QUALITY—by motorists, dealers and jobbers is reflected in the large sale of Rie Nie Fan Belts and of other Rie Nie Automotive Products of distinctive merit.

The definite demand for Rie Nie Fan Belts is the result of unusual service delivered to the motorist.

This service is due to the materials entering into their construction—and the Durkee-Atwood Company's process by which they are blended together, giving Rie Nie Fan Belts their enviable reputation of rendering efficient service over long periods of time.

Most motorists buying Rie Nie Fan Belts know that they will secure a measure of service unequalled by an ordinary belt and this fact, as proved by their own individual experience, accounts for the widely growing demand throughout every town and section these belts are sold in.

Dealers will find Rie Nie Fan Belts sell steadily and surely; and that these belts "repeat" as no other fan belt they have ever sold has repeated. The long life and efficient performance of Rie Nie Fan Belts, and of each Rie Nie Product is a guarantee to dealers of ready sales, large volume sales—and substantial profits.

Specialize in Rie Nie Fan Belts. Recommend them.

FLAT TYPE

Is made for Regular or Crowned Pulleys—and will fit exactly the car for which it is designed. Fabric is cut on bias. Herculean strength! Vulcanized in a special cover jacket which prevents ply separation. Durable! Sure grip! No slipping! A true Rie Nie Product—in every sense of the word.



DURKEE-ATWOOD®
MINNEAPOLIS, MINN., U. S. A.

Manufacturers of quality automotive products since 1910

If your jobber cannot supply you, write us direct.

RieNie

Automotive Products

All in One Dressing
Aluminum Enamel
Blowout Patches
Battery Paint
Bearing Blue
Clutch and Brake
Compound
Enamel (Air Drying)
Enamel (Cylinder)

Fan Belts
Friction Tape
Gasket Cement
Graphite
Lucky Star Casing
Patch

Polish—Auto Body
Radiator Cement
Orange Shellac
Radiator Hose
Rim Paint
Rubber Cement

Shellac (Gasket)
Rubber Filler and
Cement
Spring Lubricant
Tire Mica and Tire Talc

Leather Dressing
Metal Polish and
Nickel Polish
Patch
Pedal Pads
Tire Paints
Valve Grinding
Compound
Varnish (Clear Auto)

Are salesmen a bore?

The Branches You Located

EASTERN DEPARTMENT

Boston	Massachusetts
New Haven	Connecticut
Binghamton	New York
Long Island City	New York
New York City	New York
Newark	New Jersey
Philadelphia	Pennsylvania
Baltimore	Maryland
Charlotte	North Carolina
Atlanta	Georgia
Birmingham	Alabama
Pittsburgh	Pennsylvania
Buffalo	New York

CENTRAL DEPARTMENT

Chicago	Illinois
Detroit	Michigan
Cleveland	Ohio
Cincinnati	Ohio
Parkersburg	West Virginia
Indianapolis	Indiana
St. Louis	Missouri
Memphis	Tennessee
New Orleans	Louisiana
Houston	Texas
Tulsa	Oklahoma
Kansas City	Missouri
Omaha	Nebraska
Milwaukee	Wisconsin
Minneapolis	Minnesota
Denver	Colorado

WESTERN DEPARTMENT

San Francisco	California
Seattle	Washington
Portland	Oregon
Salt Lake City	Utah
Los Angeles	California
Phoenix	Arizona

"ALL SALESMEN bother us more or less," said an Indiana engineer, "but some concerns do not perpetrate salesmen of the *boresome* sort. They are often helpful in making clear some obscure matter. Their companies would probably sell exactly as much goods if they did not help us, but the goods would not give as much satisfaction, for the simple consideration that we should not be able to make the best use of what we do use."

Oxweld Salesmen are neither order takers nor peddlers. Nor are they of the boresome sort. They are technical advisers and helpers, and their chief mission is to see that you get the greatest possible use out of your Oxweld apparatus.

Every Oxweld representative will tell you honestly whether you can use Oxweld apparatus profitably or not. Every one can help you extend the usefulness of our apparatus after you purchase it. Half of these field representatives have been with Oxweld for five years or more and can bring valuable experience to you.

OXWELD ACETYLENE COMPANY

Chicago
3642 Jasper Place

Long Island City, N.Y.
Thompson Ave. & Orton St.

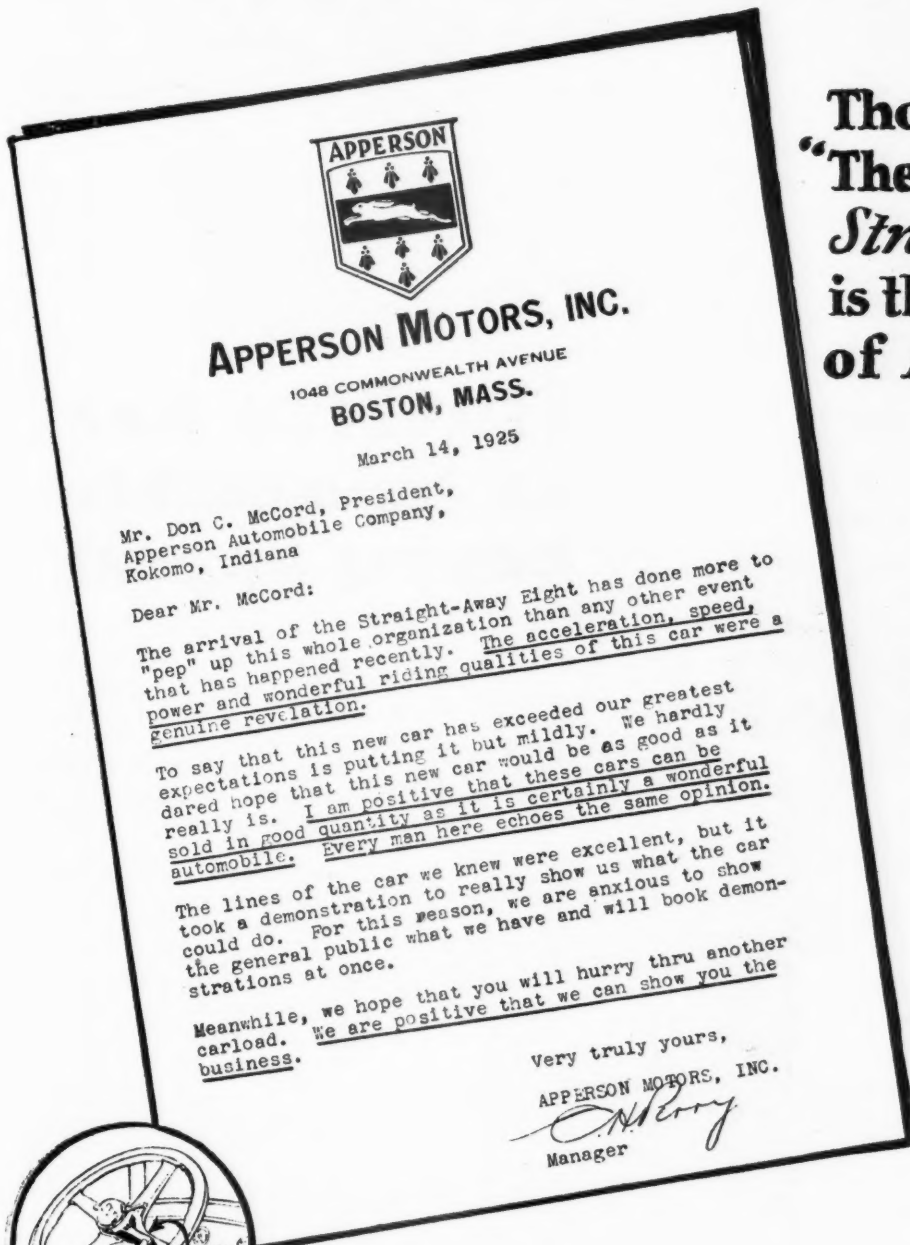
San Francisco
1050 Mission Street

Oxweld

WELDING AND CUTTING APPARATUS

WORLD'S LARGEST MANUFACTURERS OF WELDING AND CUTTING EQUIPMENT

"a wonderful automobile"



Thousands say~
"The New APPERSON
Straight-Away~8
is the Greatest
of All Eights"~

The Man that Sells
Automobiles is a Car's
Severest Critic. Here's
What One Who Knows
says about the APPER-
SON Straight-Away 8
with the Mechanical
Gear Shift.

Dealers:- Get All the De-
tails of Our 1925 Line-
Straight-Away Eights---
Super-Value Sixes---8
Models and the Apper-
son Positive Profit Mer-
chandising Plan.

[[The Apperson Mechanical Gear Shift is the Greatest Sales
Asset That has been Built into an Automobile In Twenty
Years---It is an Apperson Proved Improvement.]]

APPERSON

Jack Rabbit

APPERSON AUTOMOBILE COMPANY, KOKOMO, INDIANA



Now Is the Time

to clean out the old lubricant in the gear-boxes of your customers' cars and recommend

DIXON'S 677

for Transmissions and Differentials

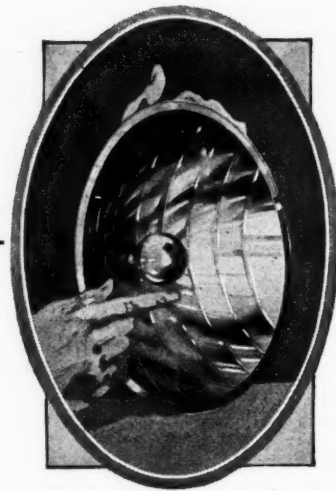
It solves the lubrication question for motorist and dealer as the selected flake graphite provides a coating over gears and bearing surfaces that stays put and lubricates.

Every car that is properly Dixonized, adds to your customers' satisfaction with your service and adds to your profit.

Write for our interesting "Dixon's Dealer Deal" No. 82-G.

**JOSEPH DIXON CRUCIBLE
CO.**

Jersey City, N. J.
Established 1827



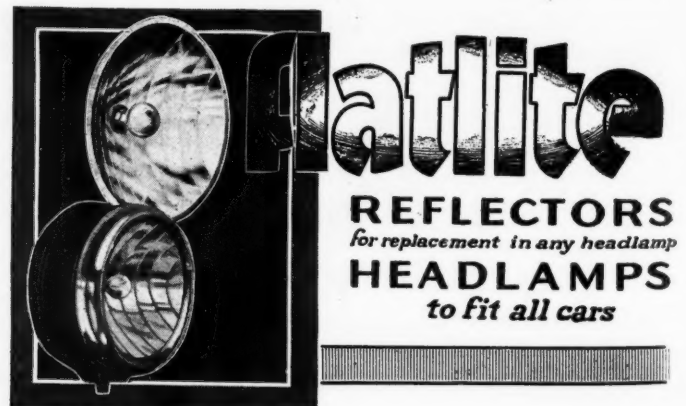
flatlite has an irresistible buying appeal

why!

BECAUSE it legalizes full, undiffused headlamp illumination. Flatlite reflectors bring daytime safety to night time driving. No lenses absorb and dilute the light that is needed to show the way. The full power of the bulbs is used, projecting a road-wide beam of dazzling brilliance far ahead but kept below the eyes of oncoming drivers. This is the service that has won the enthusiastic endorsement of over a million flatlite users, and brought big and lasting profits to flatlite distributors and dealers. Write for trade particulars.

The American Flatlite Co.
Department A
Reading Rd. at Dandridge St.
Cincinnati, Ohio

**"flatlites
bring daytime safety
to nighttime driving"**



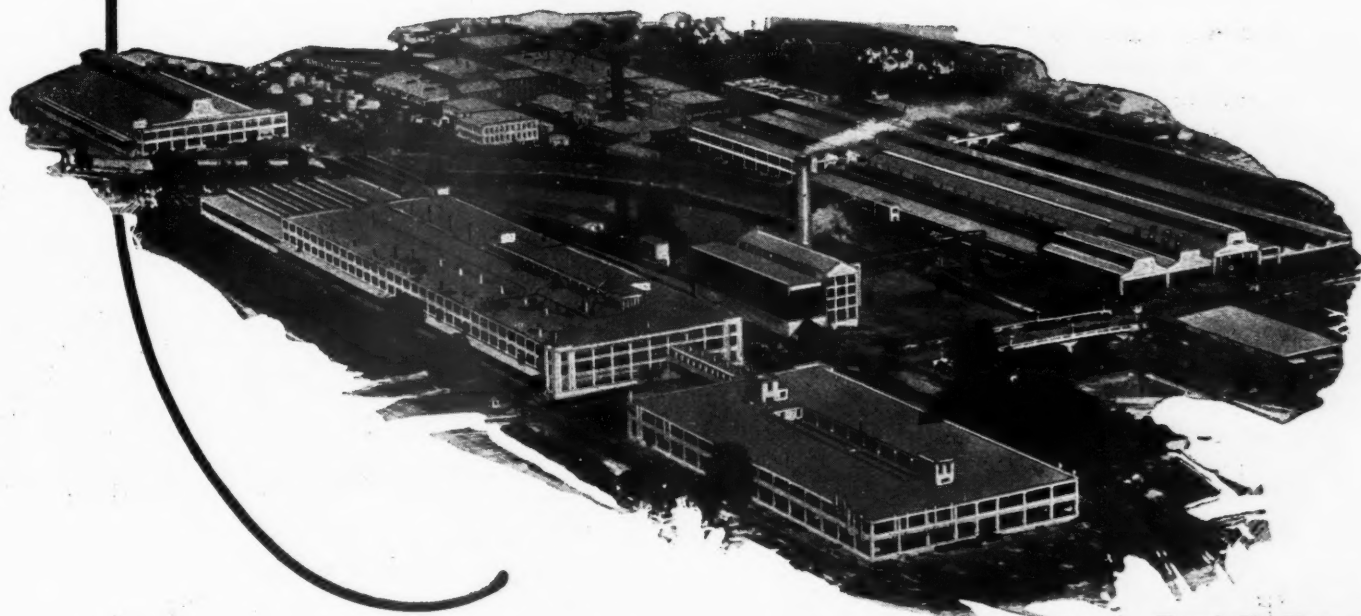
REFLECTORS
for replacement in any headlamp
HEADLAMPS
to fit all cars

features that sell
the new Chevrolet

The same fine grades of iron, steel, wood and other materials used in the world's finest cars go into the building of Chevrolet.

To put such fine quality into a car selling at such a low price requires the vast resources and purchasing power of the General Motors Corporation and the tremendous production capacity of the Chevrolet Motor Company.

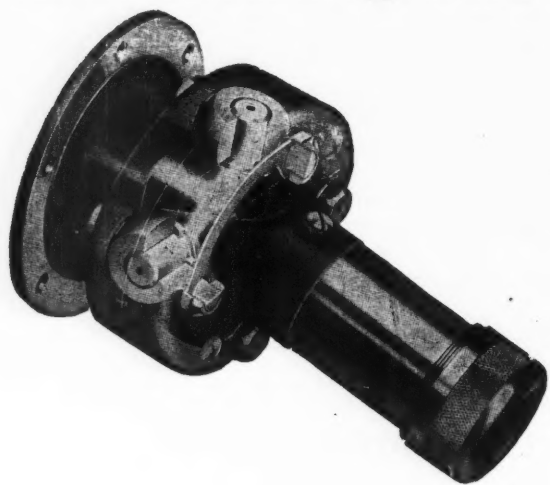
for Economical Transportation



Quality at Low Cost

Chevrolet Flint Plant—one of the twelve great factories required for the world's largest production of quality cars having three-speed transmission.

"MECHANICS" Oil Lubricated Universal Joint



Dealer-Helps

There are two kinds of dealer helps—the kind that only assist in the making of sales, and those that help keep good products sold.

This applies particularly to complete motor vehicles.

Dealers, who form the contact and make the sales, depend on properly functioning trucks and passenger cars for their profits.

Service shops, making repairs and replacements on jobs some time in use, require parts for reconditioning that will stand up, and make good.

"MECHANICS" Oil Lubricated Universal Joint is such a dealer help.

Whether supplied as standard equipment, or substituted in replacement for another part, the profit on it sticks.

*Write or wire for full
information and price.*

MECHANICS MACHINE CO.

Rockford

Illinois, U. S. A.



A Real Pressure Lubricator at a Real Price

Overwhelming as the success of pressure lubrication has been the Ford market has hardly been touched. Price has been the barrier.

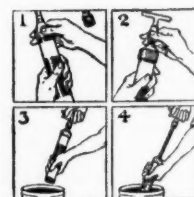
This new Rose set sweeps price aside. \$3.96 with fittings! A remarkable value at a most popular price.

Your Ford customers will buy. Test them out. You will be surprised how readily they respond. There is good profit for you in Rose Lubricators.

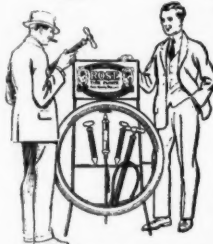
Self-Filling

The Rose is the only self-filling pressure lubricator ever made. It makes the job of lubricating quick, clean and easy.

Each Rose Gun is tested under one ton pressure and is fully guaranteed.

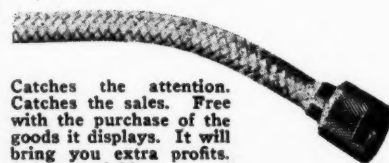


Self-filling is an exclusive feature of the Rose. To fill: (1) Remove hose, (2) Loosen pressure feed nut, (3) Place open end in grease, and, (4) pull.



**Get This Free
Merchandiser**

Frank Rose Mfg. Co., Hastings, Neb.



Catches the attention. Catches the sales. Free with the purchase of the goods it displays. It will bring you extra profits. Ask your jobber.



START NOW TO DOUBLE SERVICE SHOP PROFITS

At no other time in the year is it easier to get a rebushing job or do one than right now.

Every car that you "tune up" for Spring and Summer operation needs from a few to many new bushings in the spring shackles, the steering assembly, and the pistons.

It is easier for you to sell the car owner Bunting Phosphor Bronze Bushings than any other. List No. 18 showing Piston Pin Bushings; List No. 111 showing Spring Eye and Shackle Bolt Bushings; List No. 415 showing Steering Knuckle and Tie Rod Bushings for replacement in all popular automotive vehicles sent on request.

THE BUNTING BRASS & BRONZE CO. TOLEDO, OHIO

BRANCHES AND WAREHOUSES AT

NEW YORK
245 West 54th St.
Columbus 7528

CLEVELAND
710 St. Clair Ave., N. E.
Main 5991

CHICAGO
722 S. Michigan Ave.
Wabash 9153
(2015 S. Michigan Ave. after
May 1st)

PHILADELPHIA
1330 Arch St.
Spruce 5296

BOSTON
36 Oliver St.
Main 8488

SAN FRANCISCO
198 Second St.
Douglas 6245



"Plant some Bunting
Bushings this Spring
and watch your busi-
ness grow."

Baby Bunting



BUNTING

PHOSPHOR BRONZE BUSHING BEARINGS

P A T E N T E D

GE Allsteel

The Complete Line of Office Equipment

Allsteel Shelving

LIGHT, strong, fire-resistant—quickly erected or re-erected without special tools—and giving 10 to 30% greater storage space.

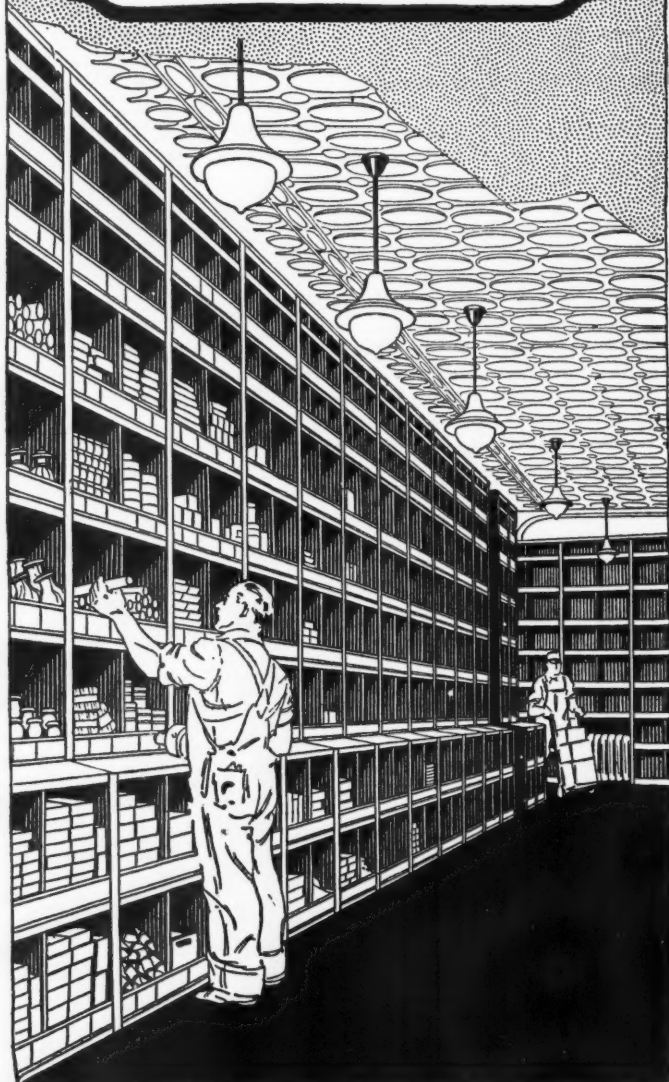
To fit growing needs, additional units may be added later—or the entire installation moved and re-erected elsewhere.

Allsteel Shelving has innumerable uses in office, store and factory, with low initial expense and no upkeep. The Allsteel mark on shelving is your guarantee of permanent satisfaction.

Write for a copy of "Saving with Shelving"

THE GENERAL FIREPROOFING CO.
Youngstown, Ohio

Dealers Everywhere • Canadian Plant: Toronto, Ontario



Attach this coupon to your firm letterhead
The General Fireproofing Co., Youngstown, Ohio
Please send me without obligation a copy of your book, "Saving with Shelving."

Name
Firm
Street No.
City..... State..... M.A.



NORTH EAST Model SH Starting Motors

are 4-Pole machines, 5 1/4" in diameter, equipped with Out-board Bendix Drive. These Starting Motors are in use on Yellow Cab Trucks, Mack Trucks, White Trucks, Safeway Six-Wheeler Buses, Gramm Pioneer Trucks, Acme Road Machines, Fay & Bowen Engines, F. W. D. Trucks.

6 Volt types with field frame 4" long exert torque (stalled) of 11 ft. lbs. at 470 amperes. 6 Volt types with field frame 4 3/4" long exert a torque (stalled) of 16 ft. lbs. at 550 amperes. 12 Volt types (long frames only) exert a torque (stalled) of 22 ft. lbs. at 550 amperes.

Genuine Parts and Official Service for all North East Equipment are available at AUTHORIZED NORTH EAST SERVICE STATIONS everywhere.

NORTH EAST ELECTRIC CO.

ROCHESTER, N. Y., U. S. A.

Manufacturers of Automotive Equipment for

Dodge Brothers	Reo
Graham Brothers	Yellow Cab
Yellow Coach	Mack
Berliet	Sterling Marine Engine
White	Safeway Six Wheeler
Fifth Avenue Coach	Dodge Watercar
Yellow Sleeve Valve Eng.	Delage
Acme Road Machine	Fay & Bowen
Leon Bollee	Moreland
American La France	Four Wheel Drive
Holt Caterpillar Tractor	

NORTH EAST SERVICE INC.

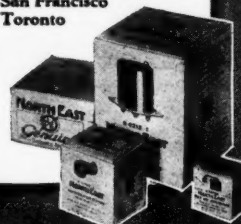
ROCHESTER, N. Y.

Official North East Service Organization

Atlanta	Chicago	London	New York
	Detroit	Paris	Rochester
	Kansas City	San Francisco	Toronto

Service Stations in Cities of Importance throughout the World

Directory of Service Stations available on request



USE ONLY *Genuine* SERVICE PARTS

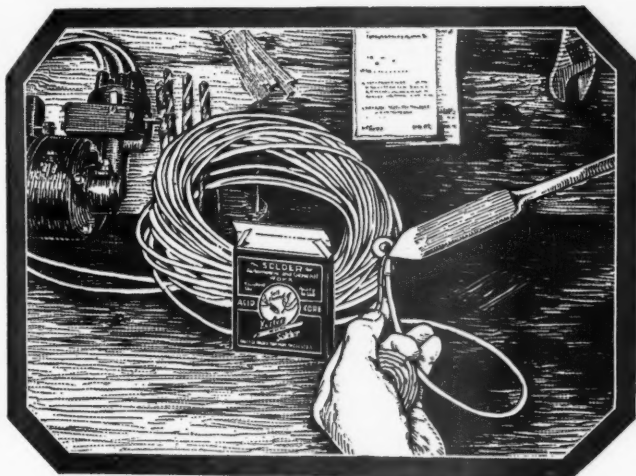
KESTER SOLDER

Self-Fluxing



(Underwriters' Laboratories Inspected)

"Requires Only Heat"



For This Important Work

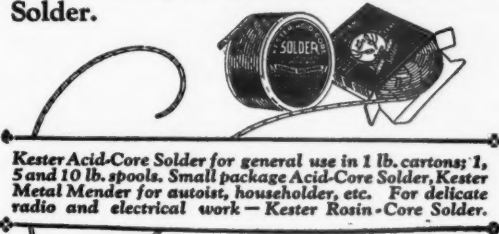
YOU know how important good ignition contacts are to the efficient operation of a motor.

Carelessly twisted wires around the binding post waste "juice." Terminals soldered to ignition wires assure a hotter spark because these contacts mean little or no leakage of current.

Use Kester Solder not only to save "juice," but also because Kester saves time, labor and material over the old way of soldering.

Kester Solder requires only heat, because inside this hollow wire solder are tiny pockets full of flux. As the solder melts, the correct amount of flux flows to the job, right where it is wanted.

Start saving today by using Kester Solder.



Kester Acid-Core Solder for general use in 1 lb. cartons; 1, 5 and 10 lb. spools. Small package Acid-Core Solder, Kester Metal Mender for autoist, householder, etc. For delicate radio and electrical work — Kester Rosin-Core Solder.

Manufactured by the

CHICAGO SOLDER COMPANY
4203 Wrightwood Ave.
CHICAGO, U. S. A.



Victor Brown-Universal Reflectors Put the Light Where It Belongs

LIGHT cast on car tops and tree tops is wasted—and dangerous. The driver's only concern is with the road. And there his light belongs. Victor Brown-Universal reflectors keep it down where it is needed—a penetrating beam that cuts the darkness with the full power of the lamps, holding it low and making it unnecessary to dim. This is the newer, better, safer road lighting method—a system that all cars will eventually use. Complies with the laws of every state.

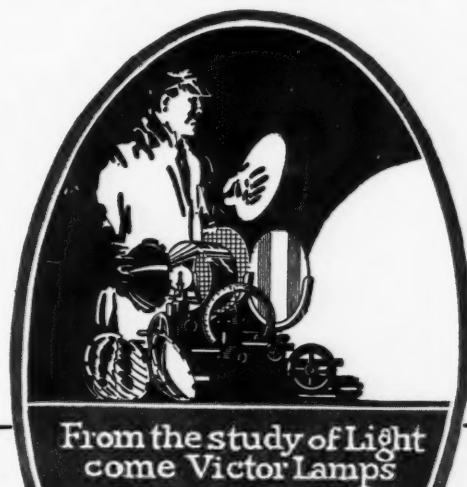
Victor Brown-Universal Reflectors are used with plain window glass. They fit over the old reflectors, and are very easy to install. They are furnished either as replacement reflectors or as complete headlamp equipment. All Victor headlamps are equipped with these reflectors.

Word from you will bring a bulletin describing the complete Victor line of automotive lighting specialties.

THE CINCINNATI VICTOR CO.
716 READING ROAD
CINCINNATI, OHIO

Victor

BROWN-UNIVERSAL
REFLECTORS AND HEADLAMPS



From the study of Light
come Victor Lamps

The Victor Line

The Mallory IGNITION COIL

Replacement Parts Jobbers and Distributors

You are passing up a lot of business if you are not handling an ignition coil. There are thousands of coils sold in your territory each year, and these coils are being sold to the same trade that you are now selling, the garage men and service stations.

THE MALLORY COIL, entirely new in design and principle, offers a big advantage over any coil on the market and will command most of the coil business in your territory.

Note the extra primary winding and the practically closed magnetic circuit core, which eliminates any possibility of the coil burning out and makes the spark so hot that engine performance is marvelously improved.

The MALLORY produces more of a flame than a spark, eliminating hard starting, retarding, fouling of spark plugs and overcoming many troubles generally assigned to causes other than ignition.

The MALLORY CONDENSER is furnished with every MALLORY COIL. It can also be used to replace other condensers, having a special bracket allowing it to be attached to any system.

Write for our distributor proposition

MALLORY ELECTRIC CORP.

Factories Building:

Toledo, Ohio



The Mallory
Condenser



Always Use

TENAX

Compressed Asbestos

Exhaust Manifold Gaskets

To begin with, TENAX is easy to get. Hundreds of leading jobbers have stocked it for more than 20 years. It comes in convenient sheets—50x50 and 25x25 in.—and standard thicknesses. It gives service unsurpassed, and seldom if ever equalled. Satisfied customers result from its use.

The "Original Blue Sheet" (except the 1/64 in. thickness) is TENAX. Ask for it by name.

There are 25 Uses on Every Car for TENAX and TANPAC Sheet Packing

TANPAC is a Fibre Sheet Packing for oil and water joints. In sheets, rolls or gasket form.

Write for illustrated literature covering the entire ADVANCE Line.

ADVANCE PACKING & SUPPLY CO.,
808 Washington Blvd. Chicago, Illinois

There are Profit Making Ideas in Every Issue of

MOTOR AGE

Many subscribers of MOTOR AGE, who realize the value of its contents each week, route every issue regularly through their places of business to all departments.

As a means of business-building this is a profitable habit to encourage, both for the benefit of the organization and its individual members. It is always best to read MOTOR AGE every week.

MOTOR AGE

5 SO. WABASH AVE.

CHICAGO, ILL.

*Permanent
roads are a
good investment
—not an expense*

Battling Your Way Into Town

It was a glorious trip. The setting sun proclaims the day about done.

And now the battle starts. It will be dark long before you reach home.

What a jam! You barely crawl along. You stop. You start. You creep ahead a few yards. Again you jam on the brakes.

Cars! Cars! Cars! Endlessly in front of you, endlessly behind you.

The driver just ahead stops suddenly. You barely miss bumping into his car.

On-coming cars honk an angry warning if you attempt to turn out. The road is too narrow.

Intersecting highways also are jammed with traffic. At every intersection again you wait, doggedly clutching the wheel in silent wrath.

At last, after literally fighting your way over the road, you swing into your own driveway.

Yes, it was a glorious trip, but—

* * *

Don't blame your highway authorities. They are ready to do their part, but they must have your support. Tell them you are ready to invest in more and wider Concrete Highways now.

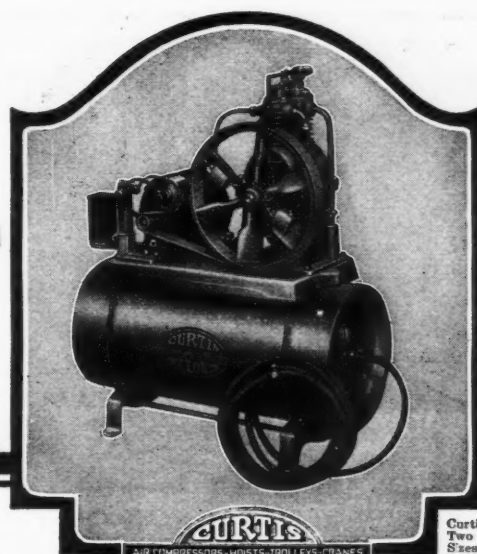
You know an early start means early relief.

PORTLAND CEMENT ASSOCIATION

*A National Organization to Improve and Extend
the Uses of Concrete*

Atlanta	Des Moines	Milwaukee	Pittsburgh
Birmingham	Detroit	Minneapolis	Portland, Ore.
Boston	Indianapolis	New Orleans	Salt Lake City
Charlotte, N. C.	Jacksonville	New York	San Francisco
Chicago	Kansas City	Oklahoma City	Seattle
Dallas	Los Angeles	Parkburg	St. Louis
Denver	Memphis	Philadelphia	Vancouver, B. C.
			Washington, D. C.

An
Original
Design



Curtis Style "V"
Two Stage Outfit
Saves three-fourths
to 2 h. p. Automatic
Starter.

Stability~Progress

Backed by 71 Years' Experience

Every Curtis Compressor Outfit and Air Stand has a background of stability measured by 71 years of progressive manufacturing experience.

The last 28 years of this long period have been devoted to the design and perfection of Curtis Air Compressors—so that today every buyer of Curtis equipment can be certain of these two vital facts:—(1) He is buying a thoroughly reliable product that has long been recognized as the standard of excellence and (2) he is dealing with an institution of known integrity and stability whose product is not likely to become an "orphan."

Superior Curtis Compressor Features

Controlled splash oiling system enables compressor to run longer on same amount of oil. Fan flywheel helps cool cylinders and increases efficiency. Valves light, large, inspectable. Heads removable without loosening pipe connections. Hand unloader (or centrifugal on automatic outfits) permits starting unloaded against full tank pressure. No spitting of oil when the Curtis Automatic cuts out. Curtis two-stage has copper inter-cooler, the most efficient metal for this purpose. Many other features.

CURTIS AIR AND WATER STAND—Made either column or low type, free from all complicated parts, automatic valves and the like which quickly get out of order. Present many exclusive features.

CURTIS PNEUMATIC MACHINERY CO.
1527 Kienlen Ave. St. Louis, U. S. A.
Branch Office: 530-HHudson Terminal, New York City



CURTIS

1854 ANNIVERSARY 1925

Mail this Coupon

CURTIS PNEUMATIC MACHINERY CO.
1527 KIENLEN AVE. ST. LOUIS, MO.

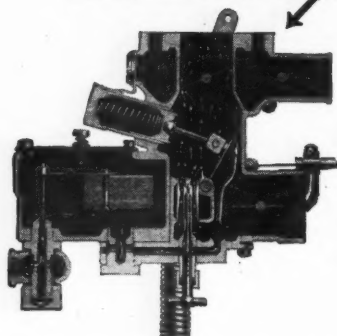
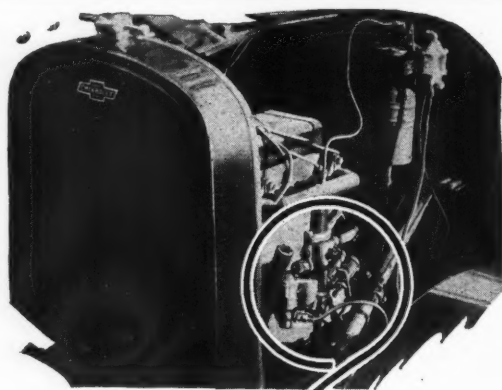
Gentlemen:—Please send me full details on ☐ Curtis Air Compressors ☐ Curtis Air Stands, your proposition and prices.

Name.....

Address.....

Jobber's Name.....

Address.....



Notice the Exhaust Gas Heat Inlet Opening and Damper or Door within same. As the Throttle Valve closes, the Heat Damper opens automatically, thus providing the important feature of Automatic Heat Control.

Marvel is Standard Equipment on Buick (for 12 years) and on NASH (for 7 years).

NEW MARVEL CARBURETER for CHEVROLETS

Trouble in starting a cold engine, backfire and spitting of a motor, and refusal to throttle low and idle smoothly, are usually caused by a long intake manifold, the mixture chilling before it enters the explosion chamber.

Installation of a Marvel on the Chevrolet raises the carbureter about EIGHT INCHES, thus keeping the mixture warmed until it enters the cylinders.

Marvel is the ONLY carbureter which secures perfect VAPORIZATION of Gasoline by surrounding the Mixing Chamber with HEAT—Heat automatically controlled by the throttle.

These two features make Marvel the ideal carbureter for every Chevrolet. It will eliminate starting and idling troubles and greatly increase the power, flexibility and economy of the Chevrolet motor.

The new Marvel model for Chevrolets is the first step in a new program of one of the oldest, best-established carbureter manufacturers in the automotive field. Other models for popular cars will be announced in the next few weeks.

A new model just ready for the new 1925 Chevrolet with short manifold that gives wonderful results.

Special Ford and Studebaker models now ready:

Ford, \$18.00

Studebaker, \$28.00

(Slightly higher on West Coast)

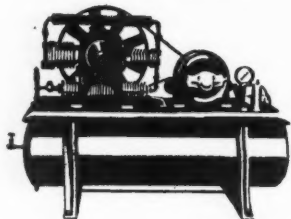
Every Accessory Dealer and Service Station will be interested in this field for new business—profitable business. Write today for the Marvel booklet of carburetion facts, "Exhaust Gas Put to Work," and for details of our attractive dealer and distributor proposition.

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We've Got Something on the Ball



Call it what you will—enthusiasm, pep, initiative—the fact remains that our products make good and our business prospers. We build silent, reliable air-compressors and sell them at reasonable prices. We have no apologies or excuses to make for them. We won't make a second-rate article. We won't skimp and we won't scamp. When we turn a job over to a buyer it stays put. Our products are up-to-date in design. They meet modern conditions of business. They are built to save time, money and trouble. If you want to stock and sell them, write us. A Postal Card will bring further information.

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Those lifting jobs that call men away from their assignment are wasters.



One man with a Canton Crane can lift more in less time than five men without one. And there are a score of other jobs, mechanics have found, where the Canton is handy and time-saving.

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Indispensable Time Saver in Tire Changing (all tires), Car Washing and general Garage work. Practically Indestructible.

Over 15,000 now in use.

	Lowest	Highest
Main lift	10½"	24½"
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in its
Innards!**

Millions of feet of EKLA have proved that a radiator hose doesn't have to have cloth "in its innards" to stand the gaff.

Altho EKLA All-Rubber Hose is better, it costs less—so it shows the dealer a bigger profit.

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After Six Months' Use.

These pictures plainly show the difference between the All-Rubber and fabric inserted hose after they have been in service. The All-Rubber hose remains solid until it breaks through the whole side-wall. It does not crack and peel off on the inside for there are no plies to separate.



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After Six
Months' Use

The ply hose being built up of a number of plies will crack on the inside. This lets the hot water, grease and radiator compounds into the cotton plies, through which the liquids seep until the plies separate. As the inside layer of rubber cracks, small pieces soon peel off and run through with the solution until a clogged pump stops the whole cooling system. And the danger is that you can't tell from the outside appearance how much damage may be going on by the cracked inside plies.

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EKLA radiator hose is tough and long-wearing—not easily damaged by heat, oil or radiator compounds.

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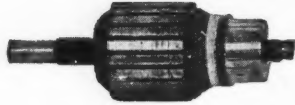
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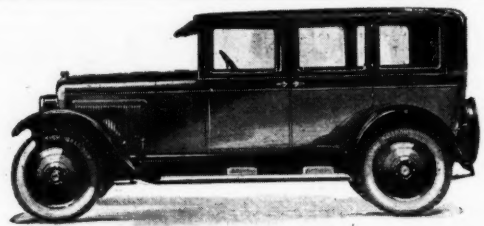


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Armature Winding Specialists
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Lower Production Costs! Better Performance

*A Consolidation of the
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Muzzy-Lyon Company.*

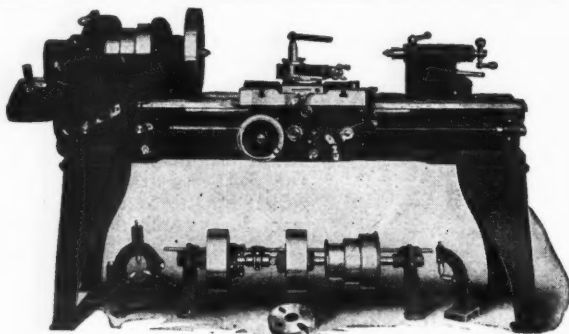
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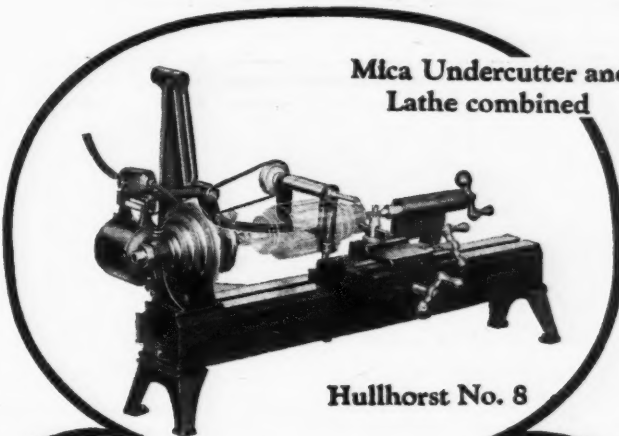
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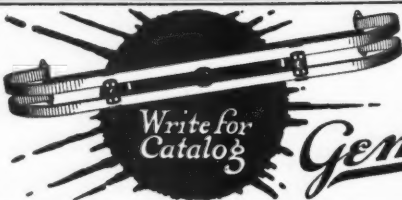
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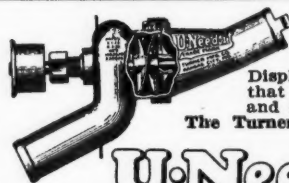
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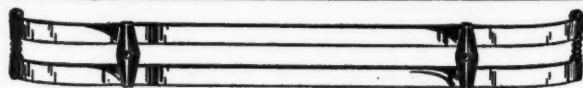
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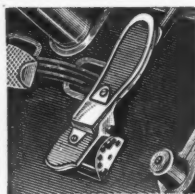
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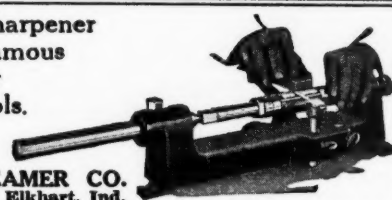
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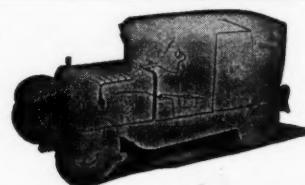
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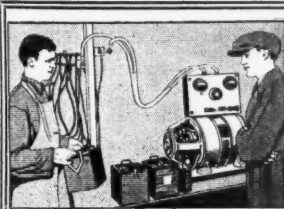
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Attorney-at-Law and Solicitor of Patents

C. L. PARKER

Formerly Member Examining Corps, United States Patent Office

American and foreign Patents secured. Searches made to determine patentability and validity. Patent suits conducted. Pamphlet of instruction sent upon request.
McGill Building, WASHINGTON, D. C.

BUSINESS OPPORTUNITIES

UNUSUAL BUSINESS OPPORTUNITY IN THE GREAT SOUTHWEST

FOR SALE—Complete control, thoroughly established, highly profitable distributorship. Leading medium priced line. Largest city of Southwest. Approximately \$750,000 gross business yearly. Big territory. Profitable retail. \$50,000 per year up. \$125,000 will handle. Ideal year-round climate—perfect living conditions. Real money maker. Address Box 6215, care of Motor Age, 5 S. Wabash Ave., Chicago, Ill.

FOR SALE—Garage and Business on cross road, four miles from Stamford, Connecticut, in growing community. Good reason for selling. Address A. B. Joy, General Delivery, Stamford, Conn.

RACING EQUIPMENT

FOR SALE—183 cu. in. Duesenberg straight eight racing car. This was Jimmy Murphy's French Grand Prix Car. Cheap for quick sale, with all extra parts. Arthur R. Bartold, 150 Westcott St., Rochester, New York.

SITUATIONS WANTED

SALESMAN—12 years' experience automotive lines wants to represent manufacturer of accessory or replacement lines; eastern territory. Address Box 6219, care of Motor Age, 5 S. Wabash Ave., Chicago, Ill.

POSITION WANTED—By capable man as shop foreman or service manager—Chevrolet. Address Box 6220, care of Motor Age, 5 S. Wabash Ave., Chicago, Ill.

Farina—
One of the stars
in "Our Gang"
Comedies

Hot dawg!

RED SEALS
sure put the joy in
RADIO

MANHATTAN ELECTRICAL SUPPLY CO., INC.

The full color, Red Seal
Window Display for April.

Humor and Human Interest

YOU will find them both in many of the displays in the Red Seal Window Display Service.

They are all real—appealing! They make batteries *interesting*.

Merchants all over the country will use the display reproduced above to speed up Red Seal sales during April.

Each of these monthly mailings constitutes a good reason why Red Seal dealers are now displaying batteries in their windows—and explains the month-by-month increase in volume of sales.

MANHATTAN
ELECTRICAL SUPPLY CO., INC.
NEW YORK CHICAGO ST. LOUIS SAN FRANCISCO

Also Makers of Red Seal and Manhattan Radio Products

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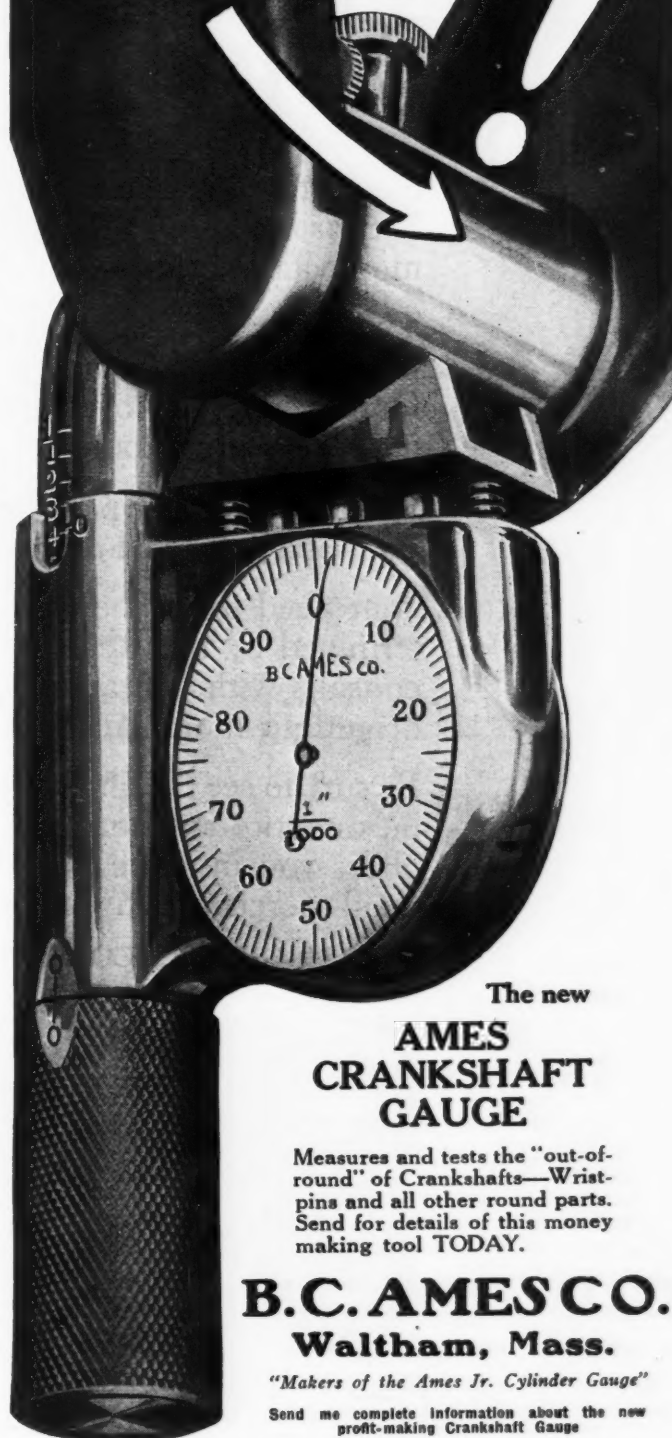
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a new source of PROFIT



The new
**AMES
CRANKSHAFT
GAUGE**

Measures and tests the "out-of-round" of Crankshafts—Wrist-pins and all other round parts. Send for details of this money making tool TODAY.

B.C. AMES CO.
Waltham, Mass.

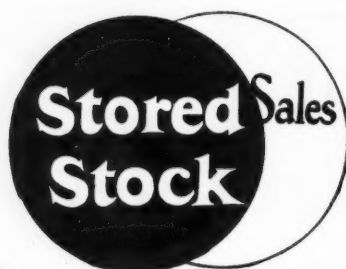
"Makers of the Ames Jr. Cylinder Gauge"

Send me complete information about the new profit-making Crankshaft Gauge

Name.....

Address.....

M. A. 4.....



ECLIPSED!

Stock stored in blind counters, or piled on shelves, without visible display, means eclipsed sales. *Seeing*, the most vital factor in successful selling, has no chance.

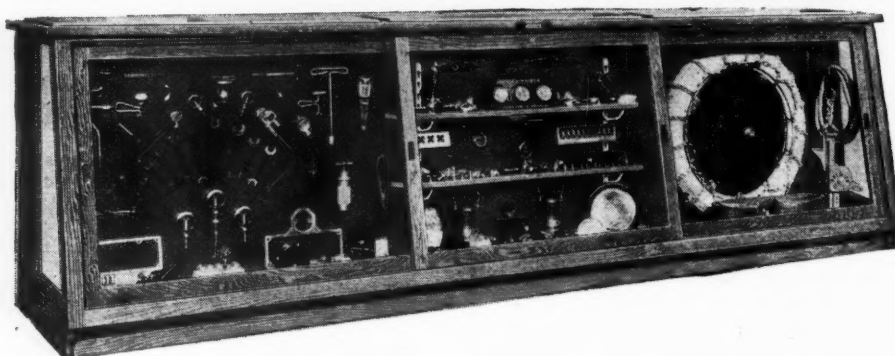
The Sherer Accessory Display Case provides for both display and storage. It brings to your store modern methods for increasing turnover, speeding up service, and preventing shop-worn goods.

Sherer Equipment pays for itself in increased business. Invariably, it is sold only where it *will* prove profitable.

Your need for a Sherer Accessory Display Case is determined by the Retail Advisory Bureau. A staff man consults with you and assists in solving your problem of getting more business without increased expense.

Be sure to see the Sherer Retail Advisor when he comes in, or write and make an appointment with him. He offers you intimate knowledge of the most successful retail merchandising methods.

SHERER-GILLET COMPANY, 17th and S. Clark Sts., CHICAGO



SHERER
DISPLAY EQUIPMENT



TWO *to* ONE

RETAIL SALES and deliveries on the NEW MARMON since the first of the year are running better than *two to one* compared with 1924. *Watch Marmon*

The NEW MARMON line of genuine four-door closed cars at practically open car price is, of course, largely responsible for this remarkable increase. Marmon now occupies a new, strategic position in the fine car field which reflects itself in the bank balance of every Marmon dealer.

The **NEW MARMON**
"It's a Great Automobile"

Sales Department

NORDYKE & MARMON COMPANY, Indianapolis, Ind.

Without obligation, please send me Portfolio A regarding the New Marmon line and the New Marmon Program.

NAME _____

ADDRESS _____



People identify the *make* of car by its front end; the *type* of car by the Disteel spare wheel on the rear.

Disteel suggests cars that just go *s-s-s-s-s* and away; the kind that not everybody tries to pass; the kind that can tolerantly let anybody pass.

The fifth Disteel wheel is just that much more reason why Motor Wheel supplies wheels to more car manufacturers than does anybody else.

MOTOR WHEEL CORPORATION, LANSING, MICHIGAN
WOOD WHEELS STEEL WHEELS STAMPINGS